Vol. 933 Number 5

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UNITED STATES PATENT AND TRADEMARK OFFICE

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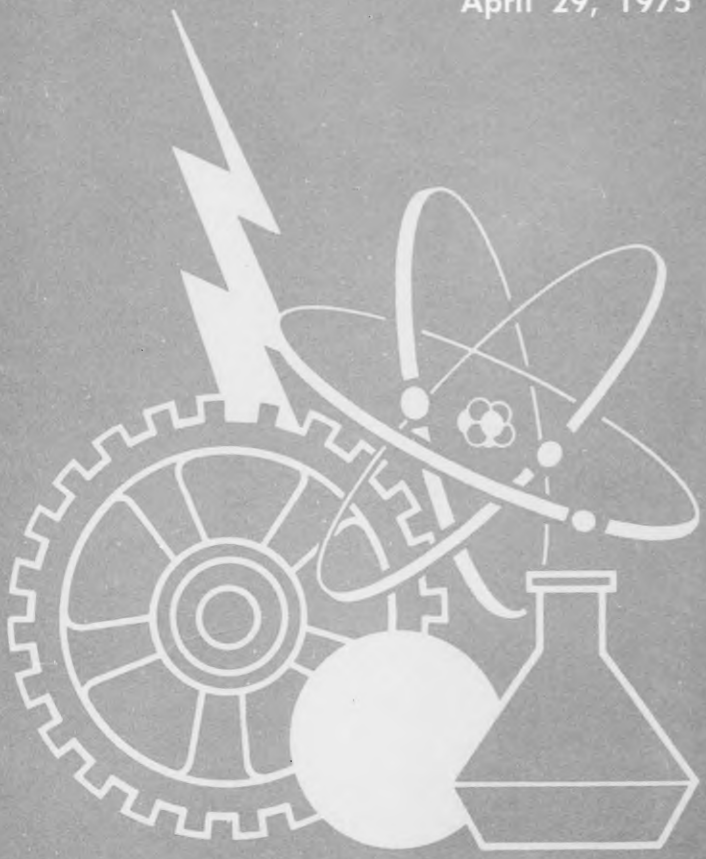

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OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

April 29, 1975 Volume 933 Number 5

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PATENT AND TRADEMARK OFFICE NOTICES

Trademark Manual of Examining Procedure, 1st Ed.

CHANGE NOTICE

Series No. 1–1

Reference: TMEP 1304.16 March 27, 1975

Identifications in Collective Membership Mark Applications

The following subject matter is being added as a new subsection to TMEP 1304:

An identification of goods or services is not appropriate in connection with collective membership marks. Trademark Rule 4.8 is a suggested form for collective mark applications in general, but when this form is used for collective *membership* marks, the line "for (Common, usual or ordinary name of goods or services)" should be omitted. A statement (placed after the words "to indicate" in form 4.8) that the purpose of the mark is to indicate membership in an organization, or in an association, a club or the like, as the case may be, is sufficient as an identification in most situations.

Although for the purpose of citing references it is desirable to know something of the general character of the applicant organization (see TMEP section 1304.08(b)), this does not necessarily mean that the identification has to be more specific than indicated above, since the identification may be read along with other information which appears in the registration copy, such as information in the mark itself or in applicant's name. An organization can be understood by knowing the area of activity of its members (for example, they may sell lumber, or cosmetics, or food, or may deal in chemical products or household goods, or they may provide services as fashion designers or engineers or accountants); or, if goods or services are not directly involved, an organization can be understood by knowing the organization's type or purpose (such as a labor union, a service or social club, a political society, a trade association, a beneficial fraternal organization, or the like). The membership mark itself frequently gives this information by reason of having in the mark an indication either of the goods or services of the members or of the character of the organization. If the mark is not sufficiently self-explanatory, applicant's name in association with the mark often provides adequate information.

If information would not appear in the registration copy in the search room in any of the above ways, the normal brief identification should be expanded to state broadly either the field of activity as related to goods or services, or the general type or purpose of the organization. Detailed descriptions of an organization's objectives or activities are not necessary.

Whether or not the normal brief identification is sufficient is within the discretion of the Examiner. If it is determined that the identification should include further information and the information is in the record, the identification may be amended by Examiner's amendment. See TMEP section 1111. If support for such an amendment is not perfectly clear, the Examiner should secure applicant's (or his attorney's) approval for the amendment, which may be done by telephone. See TMEP section 1111.01.

CHANGE NOTICE

Series No. 1–2
(Follows Change 1–1)

Reference: TMEP 1304.08(b) March 27, 1975

Refusal of Registration on a Reference Mark in Collective Membership Applications

The following subject matter is being added as a new subsection to TMEP 1304.08:

There could be such a relationship between uses of the same or similar mark as a membership mark and as a trademark or service mark that there might be a likelihood of confusion—for instance, when a mark is used by a manufacturer as a trademark for machinery and the same or substantially similar mark is used as a membership mark by members of a machinery manufacturers' trade association.

It should be possible with collective membership marks, as with other types of marks, to secure from the registration copies in the search room sufficient understanding of the use of marks to form an initial decision with regard to citing registered marks as references. (See section 4 of the trademark act.) The Examiner should therefore see that the registration copy will contain information about the collective membership organization which is adequate for this purpose. Such information does not necessarily have to be in the identification clause, however, as the identification may be read along with other information in the registration copy, but it should be in the identification if it will not be found elsewhere in the copy. See TMEP section 1304.16.

CHANGE NOTICE

Series No. 1–3
(Follows Change 1–2)

Reference: TMEP 804.02(a) March 27, 1975

Identifications of Publications and Radio and Television Programs in Connection With Title-Marks

The following subject matter is being added as a new subsection to TMEP 804.02:

In case of a mark applied as a title for a specific periodic publication such as a magazine, or as the title for a radio or television program series (see TMEP section 1301.09), it is desirable for the purpose of citing references (see TMEP section 1205) to be able to ascertain from the registration copy in the search room the general field or subject matter to which the publication or the program series is devoted, if there is one—for example, the identification might include reference to psychiatry, engineering, sanitation, and so on. On the other hand, if subject matter is not a significant aspect of the publication or the program series, the identification might then merely give an indication of the general character or type of the publication or program series—for example, by use of a term such as trade magazine, employee newspaper, situation-comedy program series, or the like. The identification of the goods or services is not the only source of the desired information, however. Marks which are titles frequently are self-explanatory. It is common for the wording selected as titles for magazines, for example, to state specifically or to suggest the subject, field of interest or general character of the magazine. This is also true to some extent in connection with radio and television programs. Also, other information which will appear in the registration copy may be considered. Registrant's name often contains wording which indicates the field or character of its business and when taken with the mark may provide sufficient information.

If the character of the publication or program can be adequately understood from the identification in association with other information which will appear in the registration copy, the Examiner should not require that a broad identification be amended to include further detail. Judgment must be exercised in each case, in view of the particular facts, in order to decide how detailed an identification should be, with the Examiner keeping in mind both the necessity of having adequate information and the desirability of eliminating unnecessary correspondence and surplusage.

RENE D. TEGTMEYER,
Mar. 27, 1975. *Assistant Commissioner for Trademarks.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,062,108, C. R. Mayo, ELECTROPHOTOGRAPHIC COPYING APPARATUS; **3,121,006**, Middleton and Reynolds, PHOTO-ACTIVE MEMBER FOR XEROGRAPHY; **3,324,291**,

F. W. Hudson, CORONA GENERATING DEVICE WITH MEANS TO CAUSE AIR FLOW THERETHROUGH TO MAINTAIN THE PARTS FREE OF DUST ACCUMULATION, **filed** Apr. 28, 1972, D.C., S.D.N.Y., Doc. 72–C–1758, *Xerox Corporation* v. *Litton Industries, Inc.* Case transferred to District of Connecticut, Mar. 27, 1973.

3,121,006. (See 3,062,108.)

3,146,598, M. F. Smith, APPARATUS FOR CONFINING FLOATING MATERIAL; **3,499,290,** same, FLOATING BOOM; **Re. 27,482,** L. G. Symons, HYDRAULIC BOWL RELEASE FOR CONE CRUSHERS, **filed** July 28, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c1859, *Millard F. Smith and Slickbar, Inc.* v. *Marsan Corporation.* Pursuant to judgment order, claims 1, 2 and 3 of 3,146,598 are invalid and void. Claims 1, 2, 3, 4 and 11–15 of patent Re. 27,452 are invalid and void. Plaintiff's claims of infringement and prayers for relief are without merit and are hereby denied, Dec. 3, 1974.

3,231,785, A. D. Calabro, CIRCUIT BOARD MOUNTING DEVICE, **filed** July 9, 1974, D.C., E.D. Pa. (Philadelphia), Doc. C.A. 74–1732, *Anthony D. Calabro* v. *The Milton Ross Company.*

3,238,126, Levendusky and Capecci, METHOD OF REGENERATING PARTICULATE ION EXCHANGE RESIN PARTICLES; **3,250,702,** J. A. Levendusky, PROCESS FOR PURIFYING LIQUIDS AND PARTICULATE ION EXCHANGE MATERIAL USED THEREFOR; **3,250,703,** same, PROCESS AND APPARATUS FOR REMOVING IMPURITIES FROM LIQUIDS; **3,250,704,** same, METHOD FOR REMOVING IMPURITIES FROM WATER STREAMS; **3,250,705,** same, A METHOD OF REMOVING IMPURITIES FROM WATER AT ELEVATED TEMPERATURES; **3,377,270,** J. R. Capecci, PROCESS OF REMOVING IMPURITIES WITH A MIXTURE OF CATION AND ANION RESINS; **3,409,566,** J. A. Levendusky, METHOD OF GRINDING STRONG BASE ION EXCHANGE RESINS IN THE HYDROXIDE FORM; **3,586,294,** J. J. Strong, METHOD AND APPARATUS FOR CREATING A SUSPENSION OF FINE PARTICLES IN A LIQUID; **3,717,594,** L. F. Ryan, STABILIZING CATION RESINS, **filed** Nov. 22, 1974, D.C.N.J. (Newark), Doc. 74–1836, *Epicor, Inc.* v. *Ecodyne Corporation.*

3,238,309, O. Christoffersen, HEARING AID APPARATUSES, **filed** Aug. 16, 1973, D.C. Conn. (New Haven), Doc. 15831, *Kendeane, Inc.* v. *Acousticon Systems Corporation.* Action withdrawn by plaintiff, Aug. 23, 1974.

3,238,939, F. F. Stubbs, WRIST SUPPORT, **filed** June 18, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–1447–R, *Frank F. Stubbs, doing business as Frank Stubbs Co.* v. *Master Industries, Inc.* Judgment, patent is valid; plaintiff is owner of patent. Defendant is enjoined from infringing claims 1, 2, 5 and 10 of said patent. Defendant's counterclaim is dismissed, Nov. 28, 1973.

3,240,198, Loudon and Campbell, ELECTRICAL APPARATUS, **filed** July 23, 1974, D.C., N.D. Ohio (Youngstown), Doc. C74–164–Y, *The Bendix Corporation* v. *The Economy Engine Company.*

3,250,702. (See 3,238,126.)

3,250,703. (See 3,238,126.)

3,250,704. (See 3,238,126.)

3,250,705. (See 3,238,126.)

3,277,594, Rogers, Taylor and Broggie, ANIMATING APPARATUS, **filed** Aug. 7, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–1832–LTL, *Walt Disney Productions* v. *Six Flags Over Mid-America, Inc.* Filed consent judgment and order thereon enjoining defendant from further infringement of plaintiff's patent, entered June 28, 1974.

3,283,326, C. B. Watts, Jr., ANTENNA ARRAY AND METHOD FOR INSTRUMENT LANDING SYSTEMS, **filed** June 10, 1970, D.C., S.D.N.Y. Doc. 70–C–2431, *Scanwell Laboratories, Inc.* v. *Cutler-Hammer, Inc.* Filed stipulation and order of dismissal without prejudice, Sept. 22, 1972.

3,285,302, E. W. Thrasher, CIRCULAR SAW MACHINE, **filed** June 13, 1974, D.C., E.D. Calif. (Sacramento), Doc. S74–238, *Masonite Corp.* v. *Louisiana-Pacific Corp.*

3,291,004, Stevenson and Ostgaard, PNEUMATIC BRAKE SETTING MEANS WITH EMERGENCY MECHANICAL ACTUATOR THEREFOR; **3,350,869,** W. C. Avrea, FLUID OPERATED BRAKE, **filed** June 21, 1974, D.C., N.D. Ill. (Chicago). Doc. 74c1704, *Royal Industries, Inc.* v. *Acme Parts & Supply Corp.*

3,298,550, B. D. Schlitz, HAYSTACK TRANSPORTING DEVICE, **filed** Nov. 1, 1974, D.C. N. Dak. (Bismarck), Doc. A1–74–78. *Farmhand, Inc.* v. *Rust Machine & Manufacturing, Inc. and Paul Robey.*

3,299,800, N. C. Angelo, BROILING AND ROASTING APPARATUS, **filed** Sept. 26, 1974, D.C., N.D. Tex. (Dallas), Doc. CA3–74–943–B, *Outdoor Leisure Products, Inc.* v. *Smoker Products, Inc.*

3,304,397, E. W. Bernhagen, PRESSURE CONTROL ACTUATOR WITH SEAL-MOUNTED ELECTRICAL ELEMENT, **filed** June 13, 1972, D.C., N.D. Ind. (South Bend), Doc. 72–S–118, *BEC Pressure Controls Corp.* v. *Dwyer Instruments, Inc.* Plaintiff recovers nothing; defendant recovers its costs laid out and expended; defendant's motion for summary judgment having been granted this date, Mar. 22, 1974.

3,305,186, Burdorf and Blakistone, TAPE TRANSPORT SYSTEM USING A DRIVE BELT CONTACTING TAPE PACKS, **filed** Aug. 23, 1971, U.S. Court of Claims, Doc. 693–71, *Echo Science Corporation* v. *United States.* Petition dismissed with prejudice upon approved stipulated order of dismissal. Said patent stipulation provides for statutory disclaimer fully disclaiming claims 1 to 3, 5 to 12 and 27; agreed construction concerning claims 4, 13 to 26 and 28. Copy of statutory disclaimer attached, July 15, 1974.

3,308,774, E. G. Keeton, SEED PLANTER, **filed** Apr. 8, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c868, *Eugene G. Keeton* v. *Raymond C. Fischer and International Harvester Co.* On motion of plaintiff, order cause dismissed with prejudice, Apr. 26, 1971.

3,322,127, C. M. Sachs, ANTI-CREEP BRASSIERE, **filed** May 28, 1968, D.C., S.D.N.Y., Doc. 68–C–2189, *William Gluckin & Co., Inc.* v. *International Playtex Corp.* Filed consent judgment, defendant and plaintiff having entered into a separate settlement agreement, there shall be no awards herein of costs, profits, damages or attorney fees, June 1, 1971.

3,324,291. (See 3,062,108.)

3,339,366, Gogan and Joly, STRUCTURE FOR LEACHING FIELDS, **filed** Sept. 12, 1974, D.C.N.H. (Concord), Doc. C–74–274, *American Precast Corporation* v. *Del Gilbert and Son Block Co. Inc. and Delphis R. Gilbert.*

3,339,827, D. J. Steidinger, SEALED ENVELOPE ASSEMBLY WITH INTERIOR MAILING MATERIAL, **filed** Sept. 13, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c2646, *Uarco Incorporated* v. *Wallace Business Forms, Inc.*

3,359,678, E. E. Headrick, FLYING SAUCER, **filed** July 29, 1971, D.C., S.D.N.Y., Doc. 71–3397, *Wham-O-Mfg. Co.* v. *Interstate Stores Inc. et al.* Filed stipulation of dismissal, Jan. 10, 1972.

3,359,869. (See 3,291,004.)

3,363,409, Schwabe and Lang, ROTARY TUBE FOR CRIMPING FILAMENTARY SYNTHETIC FIBERS BY IMPARTING THERETO A FALSE TWIST, **filed** Oct. 21, 1974, D.C., W.D. Va. (Charlottesville), Doc. 74–43(C), *W. Conway Owings & Associates, Inc. and Kugelfischer Georg Schafer & Co.*. v. *Precision Small Parts, Inc.*

3,375,549, P. Geyer, METHOD AND APPARATUS FOR REFINING AND SEPARATING PLASTIC MATERIALS, **filed** Mar. 29, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c899, *Uniroyal Incorporated* v. *Midland Ross Corporation.*

3,377,270. (See 3,238,126.)

3,392,992, Baker and Baker, TRAILER CONSTRUCTION, **filed** May 3, 1972, D.C., N.D. Ind. (South Bend), Doc. 72–S–87, *Classic Manufacturing, Inc.* v. *International Crafts, Inc. and Travel Equipment Corporation.* Order entered that counsel having stipulated to the dismissal of this cause of action, the same is hereby ordered dismissed, Aug. 5, 1974.

3,400,958, Haimes and Perryman. INTERLOCKING CLOSURE, **filed** Sept. 6, 1974, D.C., S.D. Fla. (Miami), Doc. 74–1129–C–JLK, *Plastimold, Inc.* v. *Dade Engineering Corp. and Tri-Mold Products, Inc.*

3,406,618, B. Bowman, METHOD OF MANUFACTURING BRICKS, TILES, COBBLESTONES AND THE LIKE DIRECTLY ON THE GROUND TO BE COVERED, **filed** Sept. 12, 1974, D.C. Calif. (San Diego), Doc. 74–435–S, *Bomanite Corporation* v. *Stamprete Inc. and George Fresques.*

3,409,566. (See 3,238,126.)

3,409,885, R. A. Hall, SMOKE DETECTION APPARATUS, **filed** July 9, 1974, D.C.N.J. (Newark). Doc. 74–1031, *Electro Signal Lab, Inc.* v. *Guardian Industries, Inc.*

3,421,731, Koch and Rocher, HOT TOP MAINTAINING SYSTEM, **filed** June 28, 1974, D.C., E.D. Pa. (Philadelphia), Doc. 74–1655, *Metallurgical Exoproducts Corporation* v. *Combustion Engineering Inc.*

3,424,479, Ditson and Cantrel, COUPLING AND ROD SYSTEM FOR ROCK DRILLS, **filed** Oct. 15, 1974, D.C., W.D. Pa. (Pittsburgh). Doc. CA–74–980, *Joy Manufacturing Co.* v. *Ingersoll-Rand Company.*

3,432,793, Muska, Schacker and McHattie, GROUNDING CONNECTION FOR ELECTRICAL UNIT, **filed** June 15, 1973 D.C., C.D. Calif. (Los Angeles), Doc. 73–1368–F, *William A. Muska et al.* v. *Sierra Electric, Division of Sola Basic Industries.* Filed final judgment of consent and order thereon restraining defendants from infringing plaintiff's patent, entered July 16, 1974.

3,464,424, F. D. Buzzelli, METHOD FOR RETAINING HAIR, **filed** Jan. 12, 1971, D.C., E.D. Mich. (Detroit), Doc. 35919, *Frank Buzzelli* v. *Minnesota Mining and Manufacturing Co.* Judgment granting defendant's motion for summary judgment and that plaintiff's patent is invalid and for dismissal with prejudice with costs to defendant, Aug. 22, 1972.

3,472,011, E. P. R. Scragg, TREATMENT OF ARTIFICIAL YARNS AND THREADS, **filed** Oct. 13, 1972, D.C., S.D. Fla. (Miami), Doc. 72–1643–C-Je, *Lex Tex Ltd. Inc.* v. *Bobbie Brooks Inc.* Order of dismissal determining that the complaint, sua sponte, is hereby dismissed, Aug. 29, 1974.

3,472,596, H. I. Mandelberg, DOUBLE MONOCHROMATOR, **filed** Oct. 7, 1974, D.C.N.J. (Newark), Doc. C–74–1534, *Hirsch I. Mandelberg* v. *Varian Associates, Inc.*

3,499,290. (See 3,146,598.)

3,586,294. (See 3,238,126.)

3,717,594. (See 3,238,126.)

Re. 27,482. (See 3,146,598.)

Board of Appeals Decisions Rendered in the Month of March 1975

Examiner affirmed	191
Examiner affirmed in part	42
Examiner reversed	90
Total	323

Certificates of Correction for the Week of Apr. 29, 1975

D. 232,174	3,829,211	3,855,115	3,864,159
Re. 28,263	3,830,621	3,855,199	3,864,167
3,453,807	3,830,924	3,855,399	3,864,217
3,559,887	3,831,028	3,855,655	3,864,276
3,627,548	3,832,318	3,855,780	3,864,345
3,635,015	3,833,680	3,856,810	3,864,446
3,647,087	3,834,373	3,857,708	3,864,516
3,647,863	3,835,389	3,857,816	3,864,545
3,684,506	3,835,478	3,857,847	3,864,571
3,697,308	3,836,341	3,857,849	3,864,660
3,718,541	3,836,348	3,858,297	3,864,747
3,743,733	3,837,528	3,858,473	3,864,908
3,754,173	3,837,825	3,858,489	3,865,241
3,757,150	3,838,418	3,858,558	3,865,293
3,759,169	3,838,828	3,858,648	3,865,294
3,767,330	3,839,215	3,858,826	3,865,296
3,768,411	3,839,244	3,859,102	3,865,626
3,769,915	3,839,422	3,859,170	3,865,673
3,770,138	3,839,510	3,859,416	3,865,785
3,770,764	3,839,614	3,859,524	3,865,839
3,771,322	3,841,140	3,859,537	3,866,135
3,772,124	3,842,846	3,859,579	3,866,184
3,779,838	3,844,086	3,859,701	3,866,333
3,780,078	3,844,461	3,859,858	3,866,828
3,784,536	3,844,735	3,860,202	3,866,844
3,786,047	3,845,088	3,860,438	3,866,869
3,788,956	3,845,246	3,860,551	3,866,895
3,793,300	3,845,879	3,860,840	3,866,919
3,794,277	3,846,380	3,861,699	3,867,108
3,795,186	3,846,765	3,861,806	3,867,164
3,795,426	3,846,932	3,861,850	3,867,245
3,798,291	3,846,968	3,861,888	3,867,341
3,800,836	3,847,242	3,861,927	3,867,440
3,803,414	3,848,292	3,862,037	3,867,790
3,804,367	3,848,755	3,862,158	3,867,805
3,805,071	3,848,828	3,862,187	3,867,865
3,805,742	3,849,070	3,862,301	3,867,950
3,806,904	3,849,261	3,862,513	3,868,094
3,810,535	3,849,623	3,862,705	3,868,338
3,812,335	3,850,311	3,862,718	3,868,857
3,817,741	3,850,435	3,862,796	3,868,871
3,818,708	3,850,600	3,862,803	3,869,025
3,819,061	3,850,646	3,862,888	3,869,030
3,819,488	3,850,865	3,862,923	3,869,201
3,819,633	3,850,987	3,862,959	3,869,235
3,819,690	3,851,272	3,863,153	3,869,322
3,820,099	3,852,679	3,863,176	3,869,380
3,820,237	3,853,147	3,863,225	3,870,206
3,820,513	3,853,198	3,863,267	3,870,533
3,824,893	3,853,223	3,863,500	3,870,637
3,825,386	3,853,961	3,863,739	3,870,930
3,826,823	3,854,412	3,863,774	3,871,001
3,826,909	3,854,942	3,863,844	3,871,789
3,827,994	3,855,028	3,864,018	
3,828,617	3,855,104	3,864,020	

Dedications

Des. 215,913.—*Philippe Hardy-The McLain*, Columbia, S.C. THREAD CANISTER. Patent dated Nov. 4, 1969. Dedication filed Feb. 25, 1974, by the assignee, *Shakespeare Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

2,956,701.—*Rudolph G. Larson*, Aurora, Ill. STRINGER IMPACT DEVICE FOR FORK TYPE LIFT TRUCKS. Patent dated Oct. 18, 1960. Dedication filed Sept. 20, 1974, by the assignee, *International Harvester Company.*

Hereby dedicates the entire remaining term of said patent to the Public.

3,404,836.—*William M. Hickam*, Pittsburgh, Pa. HEAT GENERATING APPARATUS. Patent dated Oct. 8, 1968. Dedication filed Aug. 27, 1973, by the assignee, *Westinghouse Electric Corporation.*

Hereby dedicates to the People of the United States the entire term of said patent.

3,423,621.—*Martin R. Royce*, Lancaster, Pa. COLOR PICTURE DISPLAY CONTAINING A RED-EMITTING EUROPIUM-ACTIVATED YTTRIUM OXYSULFIDE PHOSPHOR. Patent dated Jan. 21, 1969. Dedication filed May 13, 1974, by the assignee, *RCA Corporation.*

Hereby dedicates the entire remaining term of said patent to the Public.

Disclaimers and Dedications

2,950,228.—*Richard O. Marshall*, Muscatine, Iowa. ENZYMATIC PROCESS. Patent dated Aug. 23, 1960. Disclaimer and dedication filed Jan. 13, 1975, by the assignee, *CPC International Inc.*

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.

3,337,409.—*Robert E. Williams*, Sherman Oak, Calif. PROCESS FOR THE RECOVERY OF HEPARIN. Patent dated Aug. 22, 1967. Disclaimer and dedication filed Nov. 8, 1974, by the assignee, *Riker Laboratories, Inc.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

Disclaimers

Re. 27,626.—*Mack S. Johnston*, Encino, Calif. BEER TAPPING DEVICE. Patent dated Apr. 17, 1973. Disclaimer filed June 11, 1973, by the assignee, *Draft Systems, Inc.*

Hereby disclaims the portion of the term of the patent which extends beyond Jan. 25, 1983.

Re. 27,627.—*Mack S. Johnston*, Rolling Hills, Calif. BEER TAPPING DEVICE. Patent dated Apr. 17, 1973. Disclaimer filed June 11, 1973, by the assignee, *Draft Systems, Inc.*

Hereby disclaims the portion of the term of the patent which extends beyond Jan. 25, 1983.

2,901,348.—*John H. Dessauer*, Pittsford, and *Harold E. Clark*, Rochester, N.Y. RADIATION SENSITIVE PHOTOCONDUCTIVE MEMBER. Patent dated Aug. 25, 1959. Disclaimer filed Oct. 3, 1974, by the assignee, *Xerox Corporation.*

Hereby enters this disclaimer to claims 1–21, inclusive, of said patent.

2,944,895.—*Lloyd E. West*, Rochester, and *Bernard A. Hutchins*, Livonia, N.Y. REGENERATION OF PHOTOGRAPHIC SILVER BLEACH SOLUTIONS. Patent dated July 12, 1960. Disclaimer filed Aug. 26, 1974, by the assignee, *Eastman Kodak Company.*

Hereby disclaims the entire remaining portion of the term of said patent.

3,011,016.—*Erwin M. Roschke*, Des Plaines, Ill. SUBSCRIPTION RECEIVER. Patent dated Nov. 28, 1961. Disclaimer filed Jan. 25, 1971, by the assignee, *Zenith Radio Corporation.*

Hereby enters this disclaimer to claim 27 of said patent.

3,309,953.—*Jackson Eng*, Sarnia, Ontario, Canada. SELECTIVE CONVERSION OF NORMAL PARAFFINS WITH A CRYSTALLINE ZEOLITE. Patent dated June 19, 1962. Disclaimer filed Mar. 22, 1974, by the assignee, *Esso Research and Engineering Company.*

Hereby enters this disclaimer to claims 2 and 6 of said patent.

3,347,234.—*Joseph A. Voss,* Denver, Colo. HYGIENIC DEVICES. Patent dated Oct. 17, 1967. Disclaimer filed July 17, 1974, by the assignee, *Kimberly-Clark Corporation.*

Hereby enters this disclaimer to claim 1 of said patent.

3,353,327.—*Duncan B. Cutler, William L. Warner,* and *William A. Hadden,* De Kalb County, Ga. GUSSET APPARATUS FOR BAG FORM AND FILL MACHINE AND METHOD. Patent dated Nov. 21, 1967. Disclaimer filed Dec. 8, 1970, by the assignee, *The Woodman Company, Inc.*

Hereby enters this disclaimer to claims 1, 2 and 4 of said patent.

3,357,871.—*Robert E. Jones, Jr.,* Poughkeepsie, N.Y. METHOD FOR FABRICATING INTEGRATED CIRCUITS. Patent dated Dec. 12, 1967. Disclaimer filed June 25, 1971, by the assignee, *International Business Machines Corporation.*

Hereby enters this disclaimer to claims 1–4 and 9–12, inclusive, of said patent.

3,407,010.—*Charles L. Weber, Jr.,* Irwin, Pa. BRAKE CYLINDER PRESSURE RETAINING VALVE. Patent dated Oct. 22, 1968. Disclaimer filed Nov. 11, 1974, by the assignee, *Westinghouse Air Brake Company.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,446,689.—*Frederik W. Storm van Leeuwen, Jan C. van Dijk,* and *Johan C. Hoogeveen,* Delf, Netherlands. APPARATUS FOR THE MANUFACTURE OF PLASTIC PIPES. Patent dated May 27, 1969. Disclaimer filed June 3, 1971, by the assignee, *Shell Oil Company.*

Hereby enters this disclaimer to claim 1 of said patent.

3,540,813.—*Earl F. Murphy,* Florence, Ala. MOUNTING SUPPORT FOR HERMETIC MOTOR COMPRESSORS. Patent dated Nov. 17, 1970. Disclaimer filed Jan. 31, 1975, by the assignee, *Americold Compressor Corporation.*

Hereby disclaims the remaining term of the patent subsequent to Dec. 31, 1974.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

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The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the licensing policy of each agency-sponsor.

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Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22161, at the prices cited. Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent Office. Claims and other technical data can usually be made available to serious prospective licensees by the agency which filed the case.

Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

ENERGY RESEARCH & DEVELOPMENT ADMINISTRATION
Assistant General Counsel for Patents,
Washington, D.C. 20545

Patent 3,822,146. Application of Electrically Conductive Coatings to Insulating Tubes of Switching Magnets for Particle Accelerators. Filed July 5, 1972. Patented July 2, 1974. Not available NTIS.

Patent 3,823,350. Protective Carrier for Semiconductor Chips. Filed Sept. 5, 1973. Patented July 9, 1974. Not available NTIS.

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Patent 3,826,921. Monitor for Radiation-Induced Heating. Filed Apr. 26, 1973. Patented July 30, 1974. Not available NTIS.

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Patent 3,829,313. Brazing Alloy. Filed Mar. 7, 1973. Patented Aug. 13, 1974. Not available NTIS.

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Patent 3,835,331. Stable Pulsed Light Source. Filed Sept. 26, 1973. Patented Sept. 10, 1974. Not available NTIS.

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DEPARTMENT OF COMMERCE
Assistant General Counsel for Administration,
Washington, D.C. 20230

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DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research,
Arlington, Va. 22217

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Patent 3,794,528. Thermomechanical Method for Forming High-Strength Beta-Titanium Alloys. Filed Aug. 17, 1972. Patented Feb. 26, 1974. Not available NTIS.

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Patent 3,795,213. Diver Operated Propulsion System for an Underwater Vehicle. Filed Oct. 1, 1971. Patented Mar. 5, 1974. Not available NTIS.

Patent 3,795,432. Method for Eliminating Degradation of Crossed-Field-Amplifier Performance. Filed Feb. 3, 1972. Patented Mar. 5, 1974. Not available NTIS.

Patent 3,795,544. Pressure Balanced Fuel Cell System for Underwater Vehicle. Filed Mar. 30, 1972. Patented Mar. 5, 1974. Not available NTIS.

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Patent 3,795,873. Multichannel Noise Simulator. Filed Feb. 1, 1973. Patented Mar. 5, 1974. Not available NTIS.

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Patent 3,798,312. Process for Preparation of Chlorine Nitrate. Filed Sept. 24, 1971. Patented Mar. 19, 1974. Not available NTIS.

Patent 3,798,454. Device for Counting Accelerations, Measuring Magnitudes Thereof, Recording and Classifying the Same According to Magnitude. Filed Apr. 22, 1972. Patented Mar. 19, 1974. Not available NTIS.

Patent 3,798,647. High Frequency Passive Radio Range Finder. Filed May 25, 1972. Patented Mar. 19, 1974. Not available NTIS.

Patent 3,798,919. Deep Submergence Ambient Pressure Cryogenic Storage Apparatus. Filed Nov. 14, 1972. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,799,812. Transpiration Radiometer. Filed Aug. 22, 1972. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,800,125. Omni-Converter With Digital Phase Shifter. Filed Oct. 24, 1972. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,800,128. True Wind Speed Computer. Filed Mar. 14, 1972. Patented Mar. 26, 1974. Not available NTIS.

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Patent 3,800,248. Unidirectional Surface Wave Transducer Device. Filed Oct. 31, 1972. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,800,272. Rotating Acoustic Scanner System for Positioning Objects on the Ocean Floor. Filed Aug. 8, 1972. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,800,273. Portable Sonar System. Filed May 6, 1970. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,800,275. Acoustic Image Conversion Tube. Filed Sept. 2, 1960. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,800,276. Acoustic Image Conversion Tube. Filed Oct. 28, 1960. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,800,507. Low Pressure Air Dehydrator. Filed June 23, 1970. Patented Apr. 2, 1974. Not available NTIS.

Patent 3,800,594. Laser Accelerometer. Filed July 2, 1973. Patented Apr. 2, 1974. Not available NTIS.

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Patent 3,801,917. Time Interval Memory Device. Filed Mar. 22, 1965. Patented Apr. 2, 1974. Not available NTIS.

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Patent 3,801,981. Remote Clock Synchronization System. Filed Apr. 23, 1971. Patented Apr. 2, 1974. Not available NTIS.

Patent 3,801,983. Radar Receiver Noise Ratio Detector. Filed Apr. 24. 1972. Patented Apr. 2, 1974. Not available NTIS.

Patent 3,802,088. Guidance System for Underwater Swimmers. Filed June 14, 1971. Patented Apr. 9, 1974. Not available NTIS.

Patent 3,802,761. Optical Waveguide Edge Coupler Using Graded Index Profile. Filed. Dec. 7, 1972. Patented Apr. 9, 1974. Not available NTIS.

TENNESSEE VALLEY AUTHORITY

Division of Law, Muscle Shoals, Ala. 35660

Patent 3,861,897. Stabilization of Polyphosphate Fertilizer Solutions. Filed Oct. 13, 1972. Patented Jan. 21, 1975. Not available NTIS.

NATIONAL AERONAUTICS & SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters,

Washington, D.C. 20546

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ENERGY RESEARCH & DEVELOPMENT ADMINISTRATION

Assistant General Counsel for Patents,

Washington, D.C. 20545

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Patent 3,827,427. Apparatus for Measuring Radioactivity in the Human Eye. Filed Jan. 8, 1973. Patented Aug. 6, 1974. Not available NTIS.

Patent 3,827,946. Method for the Disposal of Combustible and Dilute Aqueous Wastes. Filed June 5, 1972. Patented Aug. 6, 1974. Not available NTIS.

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Patent 3,830,292. Flow Distribution for Heat Exchangers. Filed May 1, 1972. Patented Aug. 20, 1974. Not available NTIS.

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DEPARTMENT OF HEALTH, EDUCATION & WELFARE

National Institutes of Health, Chief, Patent Branch,

Bethesda, Md. 20014

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DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research,

Arlington, Va. 22217

Patent 3,778,635. Liquid Parametric Optical Mixing Device. Filed June 8, 1972. Patented Dec. 11, 1973. Not available NTIS.

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Patent 3,784,766. Positive Lock Toggle Guard. Filed Feb. 9, 1973. Patented Jan. 8, 1974. Not available NTIS.

Patent 3,784,805. Sonar Image Converter. Filed Oct. 4, 1972. Patented Jan. 8, 1974. Not available NTIS.

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Patent 3,786,343. Battery Monitor System. Filed Mar. 19, 1973. Patented Jan. 15, 1974. Not available NTIS.

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Patent 3,786,481. Digital Television Character Generator. Filed Apr. 19, 1972. Patented Jan. 15, 1974. Not available NTIS.

Patent 3,786,508. High Speed Angle Gate. Filed Sept. 9, 1969. Patented Jan. 15, 1974. Not available NTIS.

Patent 3,786,553. Method of Assembling Transducer Acoustically Coupled by Silicone Grease. Filed Nov. 24, 1972. Patented Jan. 22, 1974. Not available NTIS.

Patent 3,786,633. Propellant Immobilizer and Resonance Suppression System. Filed Jan. 26, 1973. Patented Jan. 22, 1974. Not available NTIS.

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Patent 3,787,186. Calcium Hydride Gas Generator. Filed Feb. 2, 1972. Patented Jan. 22, 1974. Not available NTIS.

Patent 3,787,234. Method of Producing a Thin Film Laser. Filed July 18, 1969. Patented Jan. 22, 1974. Not available NTIS.

Patent 3,787,279. Shock and Fire Attenuating Fuel Tank. Filed May 22, 1972. Patented Jan. 22, 1974. Not available NTIS.

Patent 3,787,619. Wide Angle Display System. Filed June 7, 1972. Patented Jan. 22, 1974. Not available NTIS.

Patent 3,787,740. Delay Timer. Filed Oct. 4, 1972. Patented Jan. 22, 1974. Not available NTIS.

Patent 3,787,752. Intensity Control for Light-Emitting Diode Display. Filed July 28, 1972. Patented Jan. 22, 1974. Not available NTIS.

Patent 3,787,817. Memory and Logic Module. Filed June 21, 1972. Patented Jan. 22, 1974. Not available NTIS.

Patent 3,787,846. Close-In Ranger System. Filed Aug. 10, 1972. Patented Jan. 22, 1974. Not available NTIS.

Patent 3,787,871. Terminator for Spiral Antenna. Filed Mar. 3, 1971. Patented Jan. 22, 1974. Not available NTIS.

Patent 3,788,126. Pulsed End-Burning T-Burner. Filed Mar. 28, 1973. Patented Jan. 29, 1974. Not available NTIS.

Patent 3,788,227. Jet Ignition Device for a Pyrotechnic Fuze. Filed Jan. 5, 1973. Patented Jan. 29, 1974. Not available NTIS.

Patent 3,788,255. Expendable Submarine Receiving Antenna. Filed Apr. 26, 1960. Patented Jan. 29, 1974. Not available NTIS.

Patent 3,788,262. Recovery Hook Assembly. Filed Dec. 4, 1972. Patented Jan. 29, 1974. Not available NTIS.

Patent 3,788,393. Heat Exchange System. Filed May 1, 1972. Patented Jan. 29, 1974. Not available NTIS.

Patent 3,788,543. Uniform Size Particle Generator. Filed Sept. 14, 1972. Patented Jan. 29, 1974. Not available NTIS.

Patent 3,788,680. Ordnance Handling Device. Filed June 21, 1972. Patented Jan. 29, 1974. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters,
Washington, D.C. 20546

Patent application 521,007. Growth of Gallium Nitride Crystals. Filed Nov. 5, 1974. PC $3.25/MF $2.25.

Patent application 527,728. Process for Making Anhydrous Metal Halides. Filed Nov. 27, 1974. PC $3.25/MF $2.25.

Patent application 527,790. Turnstile and Flared Cone UHF Antenna. Filed Nov. 27, 1974. PC $3.25/MF $2.25.

Patent application 531,575. Real Time Analysis of Voiced Sounds. Filed Dec. 11, 1974. PC $3.25/MF $2.25.

Patent 3,847,115. System for Depositing Thin Films. Patented Nov. 12, 1974. Not available NTIS.

Patent 3,849,875. Hall Effect Magnetometer. Patented Nov. 26, 1974. Not available NTIS.

Patent 3,851,162. Continuous Fourier Transform Method and Apparatus. Patented Nov. 26, 1974. Not available NTIS.

Patent 3,851,250. Remote Platform Power Conserving System. Patented Nov. 26, 1974. Not available NTIS.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MARCH 29, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-28-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-15-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	3-18-74
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	6-27-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-6-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	9-4-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	1-9-74
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-1-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	9-3-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	5-3-74
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	1-10-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-12-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	8-5-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-31-74
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	6-10-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-16-74

Expiration of patents: The patents within the range of numbers indicated below expire during April 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,828,487 to 2,832,958, inclusive
Plant Patents..... Numbers 1,694 to 1,697, inclusive

REISSUE PATENTS

GRANTED APRIL 29, 1975

ERRATA

For CLASS	See PATENT NO.
357-010	28,402

REISSUES

APRIL 29, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,399

INTRAUTERINE CONTRACEPTIVE METHOD

Jaime A. Zipper, Santiago, Chile, assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Original No. 3,563,235, dated Feb. 16, 1971, Ser. No. 760,688, Sept. 18, 1968. Application for reissue Aug. 7, 1972, Ser. No. 278,434

Int. Cl. A61f *5/46*

U.S. Cl. 128—130 4 Claims

1. A method of contraception which comprises placing a contraceptively effective amount of an elemental metal selected from the group consisting of copper and zinc in the uterine cavity, *said elemental metal having an exposed surface area of at least about 20 square millimeters.*

28,400

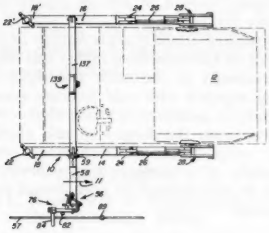
AUTOMATIC GRADE AND SLOPE CONTROL APPARATUS

Luther B. Burgin, P.O. Box 958, Poplar Bluff, Mo. 63901

Original No. 3,564,986, dated Feb. 23, 1971, Ser. No. 765,174, Oct. 4, 1968. Application for reissue Feb. 21, 1973, Ser. No. 334,433

Int. Cl. E01c *19/00*

U.S. Cl. 404—84 24 Claims



3. [The combination of claim 2 wherein] *In combination with a paving machine having a screed vertically positioned by leveling arms in accordance with changes in grade determined by a gradeline extending taut between grade rods substantially parallel to the direction of movement of the paving machine, a control system for varying the position of the screed in response to changes in grade and slope including power-operated means connected to the leveling arms for vertical and pivotal displacement of the screed, a follower device pivotally supported by at least one of the leveling arms about a pivotal axis transverse to the direction of movement of the paving machine for contact with the gradeline, and grade-signalling means for energizing the power-operated means in response to pivotal displacement of the follower device by the gradeline relative to the leveling arms, said grade-signalling means including a detecting device connected to the follower device for developing a signal and relay means connected to the power-operated means, for delaying energization thereof following said signal, said control system including gravity-operated switch means connected to the power-operated means for energization thereof in response to relative displacement of said leveling arms and switch-mounting means for pivotally adjusting the position of the switch means relative to the leveling arms, and* said power-operated means [includes] *including* solenoid valve-controlled fluid piston device pivotally mounted to each of the leveling arms, a fixed pivot assembly slidably and pivotally supporting each of the leveling arms, a lever member pivotally mounted by the pivot assembly and connected to the piston device and a link element interconnecting the lever member and each of the leveling arms.

28,401

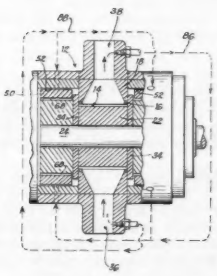
HYDROSTATIC BEARING

Terence N. Dubinsky, Racine, Wis., assignor to J. I. Case Company, Racine, Wis.

Original No. 3,671,155, dated June 20, 1972, Ser. No. 27,472, Apr. 13, 1970. Application for reissue June 10, 1974, Ser. No. 477,789

Int. Cl. F01c *21/04;* F16c *13/02, 33/66*

U.S. Cl. 418—73 4 Claims



3. A hydrostatic bearing comprising a sleeve having an inner surface, said surface having first and second substantially semi-circular, opposed segments having equal radii, said segments having centers spaced from each other, and means defining recesses in each of said segments for receiving pressured fluid whereby, when located between a support and a rotating shaft having a radius equal to said segments, [said segments will produce an] *a substantially* equal clearance *will be produced* between all portions of [the respective segments] *one segment* and the shaft *when the center of said one segment generally coincides with the center of the shaft.*

28,402

METHOD FOR CONTROLLING SEMICONDUCTOR SURFACE POTENTIAL

Joseph A. Aboaf, Peekskill, and Thomas O. Sedgwick, Crompond, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Original No. 3,767,463, dated Oct. 23, 1973, Ser. No. 114,369, Feb. 10, 1971, which is a continuation of abandoned application Ser. No. 609,200, Jan. 13, 1967. Application for reissue Feb. 8, 1974, Ser. No. 440,888

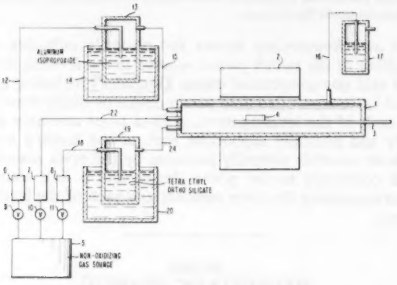
Int. Cl. B44d *1/16, 1/18*

U.S. Cl. 357—10 11 Claims

1. An article comprising:

a layer of aluminum oxide having a negative charge,

a layer of boron oxide having a positive charge disposed under said aluminum oxide layer and



a silicon substrate having an induced positive charge in a surface thereof adjacent said boron oxide layer said substrate being disposed under said boron oxide layer, said negative charge and said first-mentioned positive charge coacting to produce said induced positive charge.

28,403

5(6)-N-BUTYL AND N-PROPOXY-2-CARBOMETHOXYAMINOBENZIMIDAZOLES

Philip Paul Actor, Phoenixville, and Joseph Frank Pagano, Paoli, Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Original No. 3,682,952, dated Aug. 8, 1972, Ser. No. 48,669, May 19, 1970, which is a division of application Ser. No. 562,117, July 1, 1966, now Patent No. 3,574,845, which is a continuation-in-part of abandoned applications Ser. No. 387,524, Aug. 14, 1964, and Ser. No. 516,120, Dec. 23, 1965. Application for reissue July 25, 1973, Ser. No. 381,937

Int. Cl. C07d *49/38*

U.S. Cl. 260—309.2 **2 Claims**

1. 5(6)-n-butyl-2-carbomethoxyaminobenzimidazole.

28,404

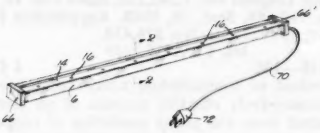
CONTINUOUS ELECTRICAL OUTLET WITH GROUND

Robert W. McFarlin, Box 563, Pompano Beach, Fla. 33061

Original No. 3,668,601, dated June 6, 1972, Ser. No. 54,377, July 13, 1970. Application for reissue May 30, 1974, Ser. No. 474,566

Int. Cl. H01S *3/16*

U.S. Cl. 339—14 R **8 Claims**



8. An elongated electrical outlet provided with continuous prong-receiving slots and having its contact prongs disposed in said slots, said outlet comprising a dielectric housing having central and outer longitudinally extending chambers, said housing including a central inverted channel having flanges constituting partitions between said chambers and downwardly converging from a central web with which said channel is provided to provide clearance of said channel flanges with said prongs beneath said slots, the flanges of said channel being connected with bottom walls of the outer chambers of said housing, side walls of said outer chambers extending upwardly from the bottom wall, top walls extending back from said side walls toward said channel and free of connection therewith to provide said slots, the side walls and top walls being formed to provide bights, the side walls further being provided with fulcrum means, substantially flat and elongated contact strips having upper side margins engaged in the respective bights and disposed to extend longitudinally in the outer chambers, said contact strips being engaged with said fulcrum means and supported thereby in positions in which their lower side margins are proximate the flanges of said channel adjacent the bottom walls of said outer chambers and below and offset inwardly of said slots to be deflected away from the flanges of said channel by plug prongs inserted in the respective slots.

PLANT PATENTS

GRANTED APRIL 29, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,709

RHODODENDRON PLANT

Angelo L. Savella, Cranston, R.I., assignor to Bald Hill Research, Inc., Exeter, R.I.

Filed Mar. 7, 1974, Ser. No. 449,068

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—57 1 Claim

1. A new and distinct variety of Rhododendron plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a vigorous and branching habit of growth, large leaves which are borne on leaf stems which have a reddish tint, the ability to set flowers at an early age, usually in the second year when grown from cuttings in containers, an early blooming habit, usually from 1 to 2 weeks before most Catawbiense hybrids, large flower clusters averaging 22 florets per cluster and with the individual florets ranging from 2½ inches to 3 inches in diameter, a clear, vivid scarlet red flower color which is completely free of blue tones that are characteristic of most other commercial red-flowered varieties in the Northeast, such as "America," "Nova Zembla," etc. (all unpatented), excellent hardiness to temperatures as low as −10° F. without injury to buds or foliage, and good resistance to Rhododendron diseases common in the Northeast, and particularly free of root rot diseases.

3,710

ROSE PLANT

O. L. Weeks, 926 W. Philadelphia, Ontario, Calif. 91762

Filed Mar. 21, 1974, Ser. No. 453,386

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—11 1 Claim

1. A new and distinct variety of rose plant of the hybrid grandiflora class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a sturdy, vigorous and upright habit of growth, exceptionally heavy and glossy foliage which is considerably above average in mildew resistance, straight and strong canes which support the blooms with no tendency to weak necks, an interesting and attractive flower form which is of extreme interest to flower arrangers, and an unusual blending of yellow flower colors of muted butterscotch and brownish yellows which, in the open flowers, form darker petals at the flower center with lighter outer petals ringing the center petals as a consistent trait independent of the aging process or weather conditions.

3,711

POINSETTIA PLANT

Paul Ecke, Jr., Encinitas, Calif., assignor to Paul Ecke Ranch, Encinitas, Calif.

Filed Apr. 22, 1974, Ser. No. 462,994

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—86 1 Claim

1. A new and distinct variety of poinsettia plant, subparticularly as to novelty by the unitque combination of a very vigirous, tough, durable and short plant habit, with the ability to grow well as a multiple stem and multiple bloom plant, a very vigorous and extensive root system, stiff stems which do not require staking, retention of the bracts, foliage and inflorescences for a long period of time after reaching maturity, a habit of not requiring light to delay bud set, a well-pinching habit which produces 3 or more breaks, a normal blooming habit at about 4° to 5° lower night temperatures than required for variety "C–1 Red" (Plant Pat. No. 2,923) during the months of October, November and December, but having the ability to be satisfactorily brought into bloom and full maturity in stantially as herein shown and described, characterized every month of the year through the exercise of proper greenhouse cultural techniques, a distinctive and attractive appearance of the bracts and their absence of any tendency to droop with age, a distinctive and attractive bright Scarlet Red general color tonality of the bracts, absence of drooping and retention of the position of the inflorescences relative to the bracts without rising as occurs in other varieties as their inflorescences approach maturity, and excellent keeping qualities and consequent suitability for home decoration.

3,712

AVOCADO TREE

John Pinkerton, 10681 Foothill Road, Ventura, Calif. 93003

Filed Mar. 28, 1974, Ser. No. 456,071

Int. Cl. A01h *5/03*

U.S. Cl. Plt.—44 1 Claim

1. A new and distinct variety of avocado substantially as shown and described, characterized particularly as to novelty by the unique combination of a small seed and longer shelf life relative to ordinary Fuerte avocados, and heavy bearing annually.

PATENTS

GRANTED APRIL 29, 1975

ERRATA

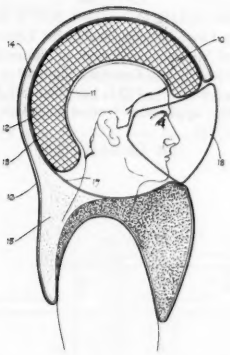
For CLASS	See PATENT NO.
005-328	3,879,796
228-123	3,879,837
228-180	3,879,838
046-044	3,879,885
072-127	3,879,994
128-R	3,880,137
128-002 A	3,880,138
242-107.4	3,880,364
060-039.16R	3,880,547
228-124	3,880,608
096-111	3,880,665
156-624	3,880,677
195-028N	3,880,738
195-028R	3,880,739
195-029	3,880,740
195-029	3,880,741
195-031R	3,880,742
424-246	3,880,851
423-235	3,881,004
424-278	3,881,030
313-453	3,881,136

PATENTS

GRANTED APRIL 29, 1975

GENERAL AND MECHANICAL

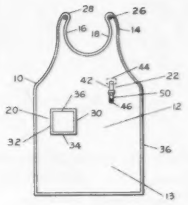
3,879,761
HEAD AND CHEST PROTECTORS, FOR EXAMPLE FOR MOTOR CYCLISTS
Peter William Bothwell, "Menocote", 116 Shipston Rd., Stratford-On-Avon, England
Filed Apr. 12, 1973, Ser. No. 350,514
Int. Cl. A42b *3/02*
U.S. Cl. 2—3 R **6 Claims**



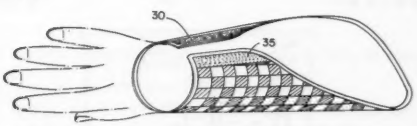
1. A protector for protecting the head, neck and upper chest of a wearer, said protector comprising a rigid outer shell which comprises a head section formed wholly to enclose the head of the wearer and having a transparent part at the front thereof, a neck section rigidly connected to the head section and formed to surround the neck of the wearer and a chest section rigidly connected to the neck section and formed to extend over the upper chest of the wearer, and a helmet for fitting on the head of the wearer which is located within and supported by the head section of the outer shell, the helmet being provided with a part-spherical outer surface and the head section being provided with a part-spherical cavity which is engaged by the said surface of the helmet so that the helmet has a ball and socket-type engagement with the head section and is capable of universal turning movement relative thereto, the chest section of the outer shell being formed to rest on the shoulders of the wearer whereby, in use, the weight of the protector is transmitted direct to the trunk of the wearer and not through his neck.

3,879,762
INVALID'S APRON AND BIB
Evelyn L. Herman, Rt. 3, Box 334, House Springs, Mo. 63051
Filed Apr. 18, 1974, Ser. No. 461,867
Int. Cl. A41b *13/10*
U.S. Cl. 2—48 **6 Claims**

1. An invalid's and children's apron comprising an apron-like flexible sheet material adapted to cover the chest and lap, a pair of curved members extending in a yoke around the neck of the user and adapted to be fastened together, and a napkin holder clamp means connected to the sheet material at the chest area, in which the napkin holder clamp means comprises a keyhole shaped ring member, a button member engageable in an enlarged portion of the keyhold and forceable in clamping relation with a napkin in an elongated reduced portion of said keyhole.



3,879,763
PROTECTIVE CUFF
Coralena Smith, 15 Navajo Pl., Portola Valley, Calif. 94025
Filed Feb. 11, 1974, Ser. No. 441,523
Int. Cl. A41d *27/12*
U.S. Cl. 2—59 **4 Claims**



1. A cuff guard comprising: a first flexible piece of material having first and second opposite side edges for confrontation one to another when said piece of material is folded to a frustrum;

a second piece of flexible material substantially congruent to said first flexible piece of material;

a male attachment member provided about the periphery of said first flexible piece;

a female attachment member provided about said second flexible piece, so that material bearing pattern, design, or color may be sandwiched between said first flexible piece and said second flexible piece;

a first leading edge extending between said two side edges for forming a first aperture in said frustrum immediately about the wrist and cuff of a wearer, said first aperture being substantially normal to an axis of generation of said frustrum;

a second trail edge extending between said two side edges for forming a second aperture in said frustrum proximate the forearm of a wearer, said second aperture being inclined with respect to an axis of generation of said frustrum whereby said aperture opens to permit movement of the elbow of said wearer when said cuff guard is worn about the forearm of said wearer.

3,879,764

WORK-GLOVE

Ralf Weber-Liel, Talweg 8, 2105 Seevetal 1, Germany

Filed Mar. 12, 1974, Ser. No. 450,425
Claims priority, application Germany, Mar. 12, 1973, 7309344; Mar. 19, 1973, 7310311
Int. Cl. A41d *19/00*
U.S. Cl. 2—167 6 Claims

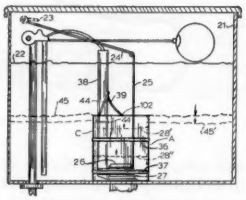
1. A work glove having a laminate at least forming the outer working surfaces, said laminate comprising: at least one backing carrier sheet material and a polyurethane sheeting bonded to the exterior of said backing carrier sheet material; and said polyurethane sheeting forming the outer exposed working surfaces of the work glove.

3,879,765

WATER SAVING METHOD FOR WATER CLOSETS

Jacob R. Moon, Hillsborough, N.C., assignor to Moon Water Saver, Inc., Hillsborough, N.C.

Division of Ser. No. 105,032, Jan. 8, 1971. This application Feb. 27, 1973, Ser. No. 336,163
Int. Cl. A47k *17/00*
U.S. Cl. 4—1 6 Claims



1. In a water closet of the type having a tank formed by bottom and side walls and providing a hydraulic head and storage chamber of predetermined height and capacity, having a tank mechanism including a movable flush valve mounted internally and in the bottom wall of the tank and seated in one end of a conduit outlet connecting the tank to a lower positioned bowl, a manual handle means connected internally of the tank to open the valve to empty the tank and an internal cooperative water supply means for refilling the tank upon the valve returning to a closed position, the opening of the valve normally causing initiation of flushing and bowl evacuation followed by substantial emptying of the tank and then closing of the valve, a method of establishing a water saving column comprising the steps:

a. without altering any of the internal tank mechanism and without disturbing the normal functioning of the handle and water supply means or reducing the hydraulic head above the valve, installing an auxiliary inperforate foldable thin wall rectangular sheet member vertically seated within the tank and by working the member around the outlet and flush valve and avoiding other internal tank mechanism to contact selected internal tank surfaces including the bottom wall surface, establishing in effect a tubular open top, column closed by the tank bottom surface and extending immediately around the outlet and flush valve and extending upwardly for only a portion of the height of the tank water chamber, said column having a predetermined volume and configuration; and

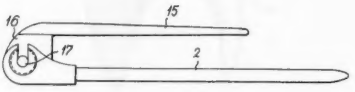
b. fixedly positioning said wall member in a position establishing said column substantially water tight with selected wall member edges contacting said selected internal tank surfaces thereby being effective upon said valve being opened to prevent on all openings thereof, emptying of the water in said tank outside said column below a level substantially equal to the level of said column top end and to cause said valve to seat and said tank to start refilling substantially immediately after said evacuation.

3,879,766

ENDOPROSTHETIC BONE JOINT DEVICE

Stewart Arthur Lowe, Daviot, and John Tracey Scales, Stanmore, both of England, assignors to National Research Development Corporation, London, England

Filed Oct. 11, 1973, Ser. No. 405,457
Claims priority, application United Kingdom, Oct. 19, 1972, 48197/72
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 8 Claims



1. An endoprosthetic bone joint device comprising:

a first hinge component having a female bearing part of annular form with a first slot along the longitudinal axial direction thereof to communicate the radially inner and outer surfaces of said annular form, and a first intramedullary stem extending laterally from said female bearing part relative to said axial direction; at least one annular bush seated in said female bearing part, which bush has a second slot formed in similar manner to, and aligned with, said first slot; and a second hinge component having a male bearing part including an axle coaxially rotatably seated in said bush, and a second intramedullary stem extending laterally from said male bearing part relative to said axial direction, said second slot having substantially parallel opposed side faces; said axle being a clearance fit relative to said first slot, and an interference fit relative to said second slot, for assembly of said device by passage of said axle through said slots; and one of said male and female bearing parts being of forked form to embrace the other one of such parts.

3,879,767

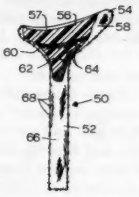
PROSTHESIS FOR ARTICULATING BODY STRUCTURES

James A. Stubstad, Lafayette, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.

Continuation of Ser. No. 220,877, Jan. 26, 1972, abandoned. This application Feb. 11, 1974, Ser. No. 441,350
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 19 Claims

1. A countoured prosthesis adapted to cover an articulating surface of a skeletal member comprising a flexible shell shaped to cover said articulating surface and having one side a smooth relatively firm surface provided by biocompatible elastomeric material and having the other side of a reticular three-dimensional, open-pore, tissue-ingrowth-receptive structure means for enabling tissue ingrowth thereinto below the surface with subsurface intertwining and intermeshing of

tissue with said structure means, said structure means being secured to said elastomeric material by partial penetration of



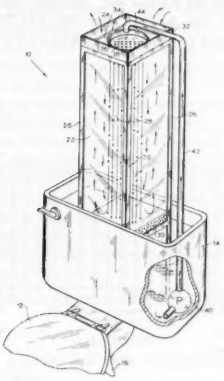
said elastomeric material into substantially the whole back of said structure means.

3,879,768

APPARATUS FOR HUMIDIFYING AND PURIFYING AIR

Joseph I. Murphy, 1409 Line Oak St., New Smyrna Beach, Fla. 32069

Filed Apr. 5, 1974, Ser. No. 458,093
Int. Cl. A47k *17/00*
U.S. Cl. 4—1 **8 Claims**



1. Air humidifying and purifying apparatus for use with a toilet comprising:
   a toilet having a tank comprising a fluid reservoir;
   means for draining said tank; (and)
   means for refilling said tank;
   an open-ended, upstanding tube extending out of said reservoir;
   means for raising fluid in said reservoir to the upper extremity of said tube; and
   means at the upper extremity for breaking fluid passing therethrough into rivulets.

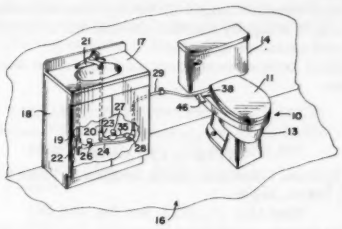
3,879,769

BIDET TOILET SEAT

Michael F. Slawinski, Chicago, and Joseph J. Cylkowski, Calumet Park, both of Ill.

Filed Dec. 26, 1973, Ser. No. 427,736
Int. Cl. A47k *3/22, 11/08*
U.S. Cl. 4—7 **13 Claims**

1. A toilet seat having discharge nozzles pivotally mounted respectively adjacent the front and rear of the seat for generally vertical angling movements and directed inwardly thereof at relatively variable angles generally in opposing relation, conduit means in the seat supplying water to said nozzles, means operatively connecting the front and rear nozzles to adjust the vertical angularity of the nozzles simultaneously, and control means on the toilet seat to regulate the flow of



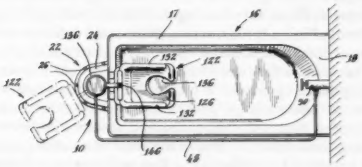
water through said conduit means and nozzles and to adjust the angularity of said nozzles.

3,879,770

FLUID OPERATED BATHTUB LIFT

Benton H. Grant, Stamford, Conn., assignor to Grant Airmass Corporation, Stamford, Conn.

Continuation of Ser. No. 167,716, July 30, 1971, abandoned. This application Jan. 11, 1974, Ser. No. 432,433
Int. Cl. A47k *3/12*
U.S. Cl. 4—185 L **8 Claims**



1. A fluid operated bathtub lift system comprising, in combination:
   A. a base,
      1. means forming a fluid pressure chamber on said base, and
      2. means forming at least one fluid passageway;
   B. a cylindrical main tube vertically mounted to said base in substantially fluid-tight relationship about said pressure chamber,
      1. and having a bearing member secured adjacent the top of said main tube, a. said bearing member having means forming a central opening therethrough;
   C. a cylindrical carrier tube telescopically mounted for axial and rotational movement over said main tube,
      1. the inner diameter of said carrier tube exceeding the outer diameter of said main tube by an amount sufficient to leave an annular clearance space of predetermined radial dimension therebetween,
      2. a top plate attached to said carrier tube;
   D. a thrust tube assembly mounted for axial movement within said main tube and carrying means forming a piston assembly adjacent the lower end thereof and rotatably supporting said carrier tube on the upper end thereof, said thrust tube assembly comprising
      1. a thrust tube supported at its lower end on said piston assembly and rotatably supporting at its upper end the top plate of said carrier tube, with said piston assembly and said carrier tube top plate being spaced by a thrust tube around a central rod,
      2. said thrust tube passing through said central opening of said bearing member, and
      3. low friction bearing means on said thrust tube assembly between said carrier tube top plate and said piston assembly;

E. a plurality of clearance rings secured on one of said main tube and said carrier tube at selected spaced positions along the length thereof and extending into said clearance space,

1. said clearance rings each having a thickness dimension which is slightly less than the said radial dimension of said clearance space; and

F. human body supporting means mounted on said carrier tube.

3,879,771

HYDRAULIC RAM

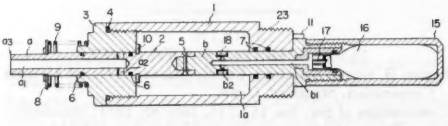
Yasuji Nakane, Yokohama, Japan, assignor to Three Bond Co., Ltd., Tokyo, Japan

Filed Oct. 15, 1973, Ser. No. 406,152

Claims priority, application Japan, May 22, 1973, 48-60603

Int. Cl. E03d *11/00*

U.S. Cl. 4—255 **6 Claims**



1. A ram for releasing gas under pressure to clear a clogged conduit, comprising: an axially extending central shaft; a peripheral cylinder surrounding said shaft, said shaft projecting at both of its ends from said cylinder, said cylinder forming a cavity around said shaft for the reception of gas under pressure; means on a first end of said shaft to mount a gas bomb, including piercing means to pierce the gas bomb and release its contents, said shaft including a first conduit extending from said piercing means to said cavity and second conduit means extending from the other end of the shaft to a valving aperture on the peripheral wall thereof; a first seal making a fluid-tight sliding seal between the cylinder and the shaft, and located between the cavity and the said first end; a second seal making a fluid-tight sliding seal between the cylinder and the shaft and located between the cavity and the other end of the shaft and also between the valving aperture and the cavity when the shaft is in a first axial position whereby to isolate the second conduit from the cavity in that position, the shaft and the cylinder being relatively slidable so the valving aperture can communicate with the cavity in a second axial position.

3,879,772

HOSPITAL BED

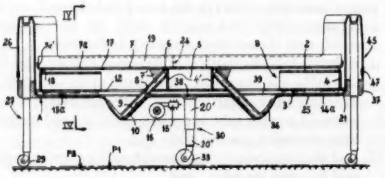
Lucien Pol, Marseille, France, assignor to Societe Provencale de Fabrications Medico-Chirurgicales S.P.O.M.C., Marseilles, France

Filed Jan. 28, 1974, Ser. No. 437,329

Claims priority, application France, Jan. 30, 1973, 73.03881

Int. Cl. A61g *7/10*; **F01b** *21/00*

U.S. Cl. 5—68 **11 Claims**



1. A bed comprising:

a mattress support having an elongated upper wall formed by a central section and a pair of end sections flanking said central section;

a mattress overlying said support;

a transversely extending hinge between each of said end sections and the corresponding edge of said central section;

a base underneath said support;

means for longitudinally tilting said base;

at least two transversely spaced inflatable first bladders between said base and said support;

means for inflating said first bladders for raising said support from said base and for tilting said support about a longitudinal axis relative to said base;

a flap underneath each of said end sections and pivotally fixed thereto, each end section extending at an angle to its respective flap and forming therewith an outwardly open V;

a second bladder between each of said flaps and said support; and

means for inflating said bladders for raising said end sections.

3,879,773

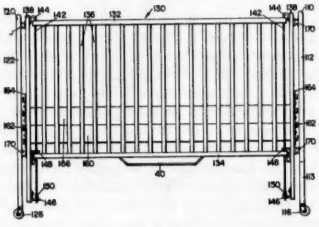
CRIB

Aaron D. Spencer, 69 Farlow Rd., Newton, Mass. 02158

Filed Jan. 8, 1974, Ser. No. 431,709

Int. Cl. A47d *9/00*; **E03d** *11/10*

U.S. Cl. 5—100 **7 Claims**



1. A knockdown crib/youth bed arrangement made from prefabricated subassemblies in the form of a headboard and footboard and opposite sides slip jointed together in assembly, the subassemblies being formed complete with requisite interconnecting means to the preclusion of loss of such parts by the ultimate consumer, comprising:

a. a pair of spaced end panels each inclusive of a pair of opposite vertically extending end rails,

b. a pair of side panels each inclusive of a pair of supplemental opposite vertically extending end rails,

c. each end rail and respective adjacent supplemental rail being slip jointed with respect to each other,

d. a pair of slide rods on the inboard side of each of the supplemental end rails,

e. one of the end panels being of two-part construction,

f. one of said pair of slide rods being of two-part construction, and

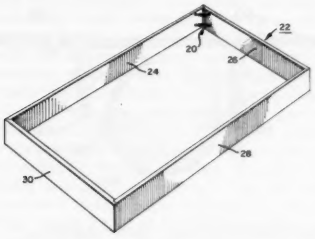
g. one part of the two-part end panel and one part of the two-part slide rods being removable to shorten said end panel and the slide rods of said pair thereof.

3,879,774

ADJUSTABLE CORNER BRACE ASSEMBLY

Stuart A. Glasser; Michael A. Hollender, both of West Hartford, and Charles H. Miller, Manchester, all of Conn., assignors to Gahm Distributor Inc., Bloomfield, Conn.

Filed Oct. 31, 1973, Ser. No. 411,309
Int. Cl. A47c 19/00, 7/14
U.S. Cl. 5—203 4 Claims



1. An adjustable corner brace assembly for interconnecting adjacent abutting frame members of a frame system, comprising:

A. a plurality of frame members incorporating eye bolt anchoring recesses near the ends of said adjacent, abutting frame members on the inside surface thereof;

B. eye bolt means pivotally mounted in the recesses of said frame members extending therefrom towards said adjacent frame members;

C. anchoring means pivotally securing said eye bolt means in the recesses of said frame members; and

D. turnbuckle means interconnecting said eye bolt means forming a unitary structure therewith;

whereby rotational adjustment of said turnbuckle means tightly secures and maintains said frame members in their desired angular arrangement securely holding said frame member in abutting relationship with the adjacent frame member, without any outwardly visible deformaties in said frame members.

3,879,775

CUSHION

Motoko Iwata, 2-1288, 2 Chome Fujimaki-cho, Chikusa-ku, Nogoya-shi, Japan

Filed Dec. 5, 1973, Ser. No. 421,869
Int. Cl. A47g 9/00; A61g 7/06
U.S. Cl. 5—341 7 Claims

1. A cushion usable as a pillow or sofa-pillow as well as a bag, which can contain a blanket or the like therein, comprising:

an outer covering sheet of a rectangular shaped fabric or the like;

three masses of cushionable material;

three compartment covers each connected to said outer covering sheet at least along a single transverse line and forming compartments either alone or in combination with said outer covering sheet, each compartment containing one of said masses of cushionable material, said compartments being disposed with respect to said outer covering sheet so as to be arrangeable in tandem; and

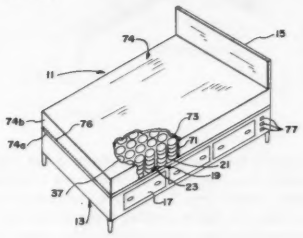
a pair of gussets which are made substantially of quadrangular shaped cloth or the like and are connected to the longitudinal edges of said outer covering sheet, substantially at three peripherial edges of the quandrangle of said gussets, respectively, to form a bag.

3,879,776

VARIABLE TENSION FLUID MATTRESS

Morris Solen, 75 Fremont Dr., Sonoma, Calif. 95476

Filed Jan. 10, 1974, Ser. No. 432,399
Int. Cl. A47c 27/08
U.S. Cl. 5—350 4 Claims



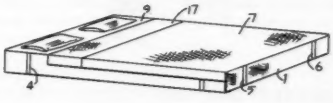
1. A fluid mattress comprising a flat rigid upper wall, a rigid lower wall and a rigid peripheral wall, said walls being joined together in fluid tight relationship to form a fluid chamber, a field of pressure expandable pads secured to said top wall, each of said pads comprising a bellows shaped tube having a closed upper end and an open lower end, and means within the bellows shaped tube for limiting the expansion thereof, the interior of each of said pressure expandable pads being in fluid communication with said fluid chamber, and means for applying fluid under pressure to said chamber.

3,879,777

BEDDING ARRANGEMENT

Donald A. Walker, 564 Hallsor Dr., Victoria, British Columbia, Canada

Filed Jan. 18, 1974, Ser. No. 434,592
Int. Cl. A47g 9/00
U.S. Cl. 5—334 C 1 Claim



1. A bedding arrangement, comprising

a mattress;

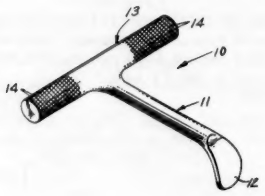
an under outer cover removably affixed to the mattress;

an over outer cover affixed to the under outer cover along the foot edges thereof, under and over outer covering being removably affixed to each other along their side edges for a distance approximately four-fifths their length from their foot edges;

an under sheet removably affixed to the under outer cover; and

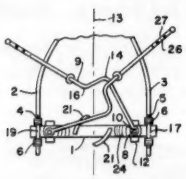
an over sheet affixed to the under sheet along the foot edges thereof, the under and over sheets being affixed to each other along their side edges for a distance approximately two-thirds their length from their foot edges, the over outer cover, the under sheet and the over sheet having widths greater than that of the mattress to accommodate a person sleeping in the bedding.

3,879,778
FUSE CLAMP FILE
J. F. Archer, P.O. Box 127, Thornton, Tex. 76687
Filed Oct. 7, 1974, Ser. No. 512,899
Int. Cl. B25f *1/00*
U.S. Cl. 7—17 3 Claims



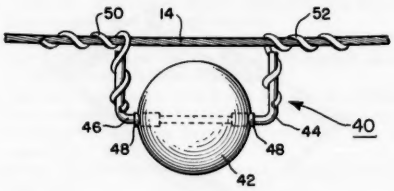
1. A fuse clamp file, comprising a shank, a flat end portion carried at one end of said shank for removing a cartridge fuse from its clamp, a transverse bar portion carried by said shank at the other end, said bar providing filing means on opposite sides of said shank for removing possible corrosion within said clamp.

3,879,779
PORTABLE CROSSBAR FOR BOAT USE
Harold A. Jewett, 5451-42nd St., N.W., Washington, D.C. 20015
Division of Ser. No. 383,379, July 27, 1973, Pat. No. 3,857,356. This application Mar. 15, 1974, Ser. No. 451,563
Int. Cl. B63c *13/00*
U.S. Cl. 9—1 R 4 Claims



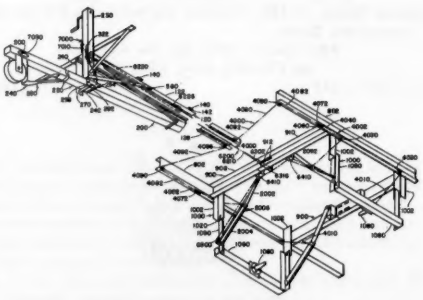
2. In combination:
A boat having a pair of gunnels,
A crossbar resting athwart said gunnels, and
A pair of elongate rigid clamp bars having upwardly recessed bottom surfaces and being respectively contoured for lengthwise placement along said gunnels with said upwardly recessed surfaces in overlying contact with portions of said crossbar at loci directly suprajacent to said gunnels,
Frontward and rearward portions of each said clamp bar being secured on said gunnels by strips of fastening tape, one endward portion of each such strip being adhesively attached to an outer wall surface of said boat subjacently to a said clamp bar, and the oppositely endward portion of such strip being adhesively attached to an inner wall surface of said boat subjacently to the same clamp bar,
Said crossbar thereby serving as a potential support for objects carried by said boat.

3,879,780
APPLIANCE FOR LINEAR BODIES
Harrison L. Williams, Cleveland, Ohio, assignor to Preformed Line Products Company, Cleveland, Ohio
Division of Ser. No. 172,181, Aug. 16, 1971, Pat. No. 3,772,718. This application May 2, 1973, Ser. No. 356,594
Int. Cl. B63b *21/52*
U.S. Cl. 9—8 R 4 Claims



1. An appliance for a linear body, comprising:
supported means having a relatively large, light-weight member of a predetermined geometric configuration in spaced relation to said linear body;
attachment means including a pair of L-shaped elements each having a first end portion securely engaging on opposite side of said member and extending outwardly therefrom and a second end portion disposed perpendicular to said first end portion for maintaining the supported means in said spaced relation; and
a pair of helically preformed appliances each having first and second leg portions for encircling in secure gripping engagement said linear body and said second end portions respectively, thereby securely connecting said member to said linear body.

3,879,781
PONTOON BOAT TRAILING ASSEMBLY
Stanley Roschynialski, Rt. 1, Grand Island, Nebr. 68801
Filed Oct. 18, 1972, Ser. No. 298,782
Int. Cl. B63c *13/00*
U.S. Cl. 9—1 T 5 Claims



1. A trailing boat system comprising: a pontoon boat having two spaced pontoons on the starboard and port sides of the center of said boat, said boat having a frame means connecting said pontoons and a deck supported on and connected to said frame, port and starboard wheel supporting assemblies, means attaching said wheel supporting assemblies to said frame means, port and starboard wheels mounted on said wheel supporting assemblies respectively, said wheel supporting assemblies being adapted to permit said wheels to be disposed in downward road positions in which the undersides of said wheels are disposed below the undersides of said pon-

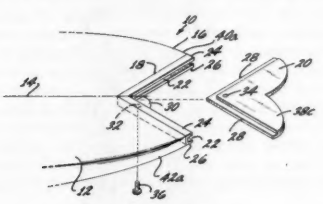
toons and also in upper storage positions in which latter said wheels are disposed upwardly from their respective road positions, and manually operable control means operatively correlated with said wheel supporting assemblies for causing said wheels to be movable from one to the other of said wheel positions, said wheel supporting assemblies comprising upper rigid anchor members attached to said frame means, swinging rigid means pivotally attached and extending downwardly from said anchor members respectively, said swinging rigid means each being attached to said anchor members respectively in a manner for the swinging of the lower part of each swinging means inwardly and upwardly of said trailer from outer lower road positions to inner upper storage positions, means rotatably attaching said wheels respectively to said swinging members in a manner such that said wheels are in road travel positions at times when said swinging members are in their downward positions and so that said wheels are in upper storage positions at times when said swinging members are in their respective storage positions, and each wheel support assembly having hinging bracing linkage means facilitating the maintenance of the respective swinging means in road positions but adapted to fold for permitting the respective swinging means to swing upwardly and inwardly for storage, said hinging bracing linkage means each comprising an upper and lower link forming a pair of links, the links of a pair being pivotally connected at adjacent ends for hinging and said latter pairs having other ends which are pivotally connected one end to the respective said swinging rigid means and one end to said frame means, stop means connected to said hinging bracing linkage means and preventing said latter means from moving out of a road position thereof, each said stop means having as one of its parts a restraining means mounted on one of the links of a pair and engaging the other link of that pair for preventing the adjacent ends of the respective links from moving outwardly excessively beyond desired road positions thereof.

3,879,782

SURFBOARD WITH REMOVABLE TAIL SURFACE AREA PORTION

Clifford Clinton Oliver, 2439 Grandview St., San Diego, Calif. 92110

Filed Aug. 6, 1973, Ser. No. 385,896
Int. Cl. A63c *15/00*
U.S. Cl. 9—310 E **8 Claims**



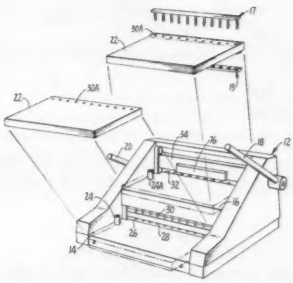
1. An improved surfboard comprising:
a unitary surfboard structure having a tail block portion with a cut away tip surface area;
a plurality of differently configured tail block tip surface area sections;
mating means for removably mating any selected one of said plurality of said tip surface area sections to said cut away tip surface area of said surfboard so as to provide a tip surface area of desired configuration to said surfboard; and
removable locking means for locking the mated one of said plurality of tip surface area sections to said surfboard;
said cut away tip surface area is substantially "V" shaped; said mating means comprises a slotted channel on the rear periphery of said tail block portion and each of said plurality of tip surface area sections include a flange for mating within said slotted channel.

3,879,783

PAPER BINDING MACHINE

Joe D. Giulie, Palo Alto, Calif., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Feb. 11, 1974, Ser. No. 441,378
Int. Cl. B42c *19/00*
U.S. Cl. 11—1 R **10 Claims**



1. A machine for assembling a perforated sheaf of papers into a bound volume wherein the binding element utilized consists of a first backing member having a series of studs thereon, each stud having ratchet teeth and a second backing member having a series of mating holes with at least one ratchet tooth in each of said holes positioned to mate with a tooth on a stud inserted therein and with a blocking member for locking a ratchet tooth on each of the studs to a ratchet tooth in a hole, comprising in combination:
a. means for supporting said second backing member while leaving said blocking means free of said supporting means,
b. means for corresponding said backing members together with the studs passing through the perforated sheaf of papers and into the holes whereby the ratchet teeth engage and hold the sheaf of papers in bound relationship,
c. means for moving said blocking means into place to lock said ratchets together, and
d. means for cutting off an excess length of said studs extending beyond said second backing means.

3,879,784

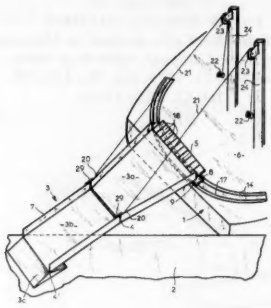
SLEWING ACCESS RAMP FOR VEHICLES

Henri Kummerman, Geneva, Switzerland, assignor to Macgregor International S.A., Basel, Switzerland

Filed July 18, 1973, Ser. No. 380,469
Claims priority, application France, July 24, 1972, 72.26607; June 4, 1973, 73.20219
Int. Cl. B65g *11/00*
U.S. Cl. 14—71 **39 Claims**

1. A movable device forming an access ramp to interconnect a vehicle and an outside platform, said ramp being pivotally connected to the vehicle so as to be swingable upwards into an inoperative substantially unstanding position stowed on said vehicle and downwards into an operative outward projecting working position, wherein the improvement consists in that said ramp comprises means for variable connection to said vehicle so that it may be slewed in parallel relation to a horizontal plane about at least one substantially vertical geometrical swivel axis whereby in its lowered configuration, the relative angular position of its longitudinal direction is selectively adjustable with respect to said vehicle, said last-

named means comprising posts, at least two selectively operable winches associated with said posts and at least two han-



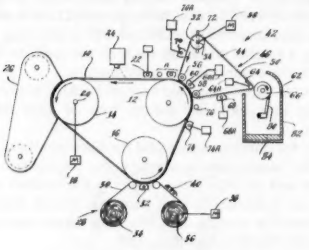
dling ropes connected between respective of said winches and said ramp and selectively windable up on said winches.

3,879,785

CLEANING APPARATUS

Charles F. Roth, Monroe, N.Y., and Gordon C. Butler, Welwyn Garden City, England, assignors to Xerox Corporation, Rochester, N.Y.

Filed Apr. 27, 1973, Ser. No. 354,962
Int. Cl. B08b *1/02*
U.S. Cl. 15—1.5 **12 Claims**



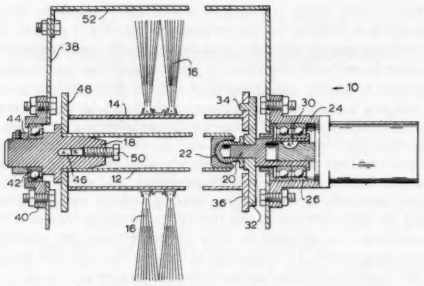
1. Apparatus for removal of electrostatically adhering toner from an electrostatic imaging surface in an electrostatic imaging device comprising an endless loop cleaning means formed of a fiber structure on a resilient backing transported over an area of interfering contact with said imaging surface, first means for applying an electrical biasing potential to said cleaning means, said biasing potential being of a magnitude and polarity sufficient to provide an intense field across said interfering contact to thereby attract said toner from said surface to said cleaning means with a minimum of said interfering contact, pick-off means positioned in proximity with said cleaning means, second means for applying an electric biasing potential to said pick-off means, said biasing potential being of a magnitude and polarity sufficient to attract said toner from said cleaning means to said pick-off means, and third means for receiving said toner from said pick-off means, said pick-off means including a pick-off forming roller positioned within said cleaning means, said pick-off forming roller being of a diameter sufficient to cause said resilient backing to deform about said roller until said fibers separate, exposing the root structure thereof, and a pick-off roller coacting with the spread portion of said fiber pile for removing toner from said root structure.

3,879,786

PIVOTABLE ROTARY BRUSH DRIVE ASSEMBLY

Robert F. Larkin, Butler, N.J., assignor to Ecolotec Inc., Kenilworth, N.J.

Filed Feb. 7, 1974, Ser. No. 440,365
Int. Cl. A46b *13/02*
U.S. Cl. 15—21 D **3 Claims**



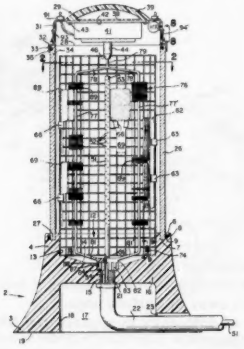
1. A rotatable brush mounting adapted to receive a brush core comprising a drive shaft for transmitting to the brush core power for driving the brush core in rotation, a core-supporting shaft pivotally connected to the drive shaft for supporting the brush core, an idle shaft removably connected to the core-supporting shaft for positioning the brush core on the core-supporting shaft, and pivotal means interconnecting the drive shaft and the core-supporting shaft for permitting the core-supporting shaft to pivot relative to the drive shaft when the idle shaft is removed.

3,879,787

HAIR BRUSH AND COMB CLEANING APPARATUS

Doris A. Russo, 124 Westhills Dr., Los Gatos, Calif. 95030

Filed July 5, 1973, Ser. No. 376,629
Int. Cl. A46b *13/02*
U.S. Cl. 15—38 **10 Claims**



1. A hair brush and comb cleaning and disinfecting apparatus, comprising:

a. a unitary base member having an integral peripheral seal flange surrounding a central recess;

b. a hollow body sealingly supported on the peripheral seal flange of the base member and within which brushes and combs to be cleaned and disinfected are adapted to be supported;

c. a cover assembly closing the end of the hollow body remote from the base member to prevent the escape of cleaning and disinfecting fluids from said hollow body;

fluid delivery means projecting into said hollow body through said unitary base member and adapted to disperse a cleaning and disinfecting fluid radially outwardly onto the brushes and combs to be cleaned;

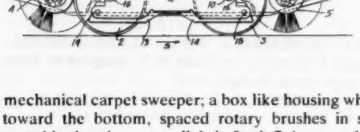
e. rack means within said hollow body disposed about said fluid delivery means and supported on said base member within said peripheral seal flange and on which brushes and combs to be cleaned are adapted to be detachably secured; and

f. means associated with said base member for draining said cleaning and disinfecting fluid from the interior of said hollow body.

3,879,788
MECHANICAL SWEEPER

Maurice Claude Cousin, Flers, France, assignor to A. & M. Cousin et Cie Etablissements Cousin Freres, Flers, Orne, France

Filed Feb. 2, 1973, Ser. No. 329,216
Claims priority, application France, Dec. 7, 1971, 71.43932; Sept. 29, 1972, 72.34708
Int. Cl. A47l *11/33*
U.S. Cl. 15—42 **9 Claims**



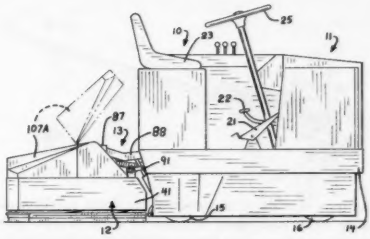
1. In a mechanical carpet sweeper; a box like housing which is open toward the bottom, spaced rotary brushes in said housing rotatable therein on parallel shafts defining axes having terminal ends and protruding downwardly therefrom and comprising a forward brush near the front of the housing and a rearward brush near the back of the housing, forward and rearward drive rollers for driving said brushes and supported in said housing for bodily movement in the housing in the fore and aft direction, roller support means with said rollers protruding from the bottom of the housing and engaging the floor surface beneath the housing so as to rotate when the housing is moved in the fore and aft direction on the floor surface, said rearward rollers being in front of said rearward brush and said forward rollers being in back of said forward brush, the rearward rollers frictionally engaging and driving said rearward brush while said forward rollers disengage from the forward brush when said housing is moved in the forward direction on said floor surface, and vice versa, and spring means operatively provided with said housing and bearing on said roller support means to diminish play of terminal ends thereof.

3,879,789
SCRUBBING MACHINE

Joseph G. Kasper, Minneapolis, Minn., assignor to Tennant Company, Minneapolis, Minn.

Division of Ser. No. 72,275, Sept. 15, 1970, Pat. No. 3,702,488. This application Oct. 24, 1972, Ser. No. 299,824
Int. Cl. A47l *11/18*
U.S. Cl. 15—50 C **14 Claims**

1. A scrubbing machine for scrubbing a surface comprising a frame, a pair of surface engaging rotary tools mounted on the frame for rotation about parallel, transversely extending axes, means on the frame for applying a scrubbing liquid to the surface in the path of movement of the rotary tools over the surface, and means mounted on the frame for collecting scrubbing liquid, the last mentioned means including squeegee means along the lateral sides of the frame laterally aligned with said rotary tools, said squeegee means including surface engaging row brushes on each side of the frame adjacent the ends of the rotary tools and aligned with the gaps between the rotary tools, said squeegee means further including a squeegee

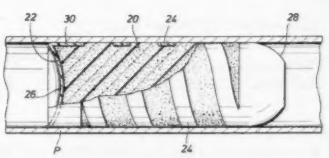


frame extending along one lateral side of the frame, one of the row brushes being mounted on the squeegee frame, and a flexible surface engaging member mounted on the squeegee frame laterally outwardly of said one row brush from the rotary tools and extending fore and aft of the rotary tools.

3,879,790
PIPE LINE PIG

Harry J. Girard, 2422 Bartlett St., Houston, Tex. 77006

Division of Ser. No. 835,424, June 23, 1969, abandoned. This application Dec. 17, 1970, Ser. No. 98,985
Int. Cl. B08b *9/04*
U.S. Cl. 15—104.06 R **20 Claims**



1. A pipeline pig adapted to be inserted in a pipe to be propelled therethrough by a pressure gradient, comprising:

a generally cylindrically shaped body formed of resilient material;

a covering for said body formed of material which is of harder and more durable material than said body and having radially disposed openings therein into which the material of said body extends in the uncompressed state before said pig is inserted in said pipeline to form with said covering a continuous cylindrical surface extending substantially from end to end thereof positioned for engagement with the surrounding wall of the pipe.

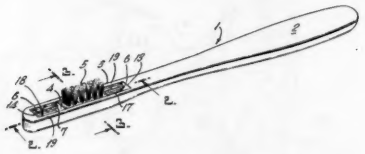
3,879,791
TRAINING TOOTHBRUSH

Stuart Isler, 21 Broadway, Denville, N.J. 07834

Filed Dec. 14, 1973, Ser. No. 424,675
Int. Cl. A46b *9/04*
U.S. Cl. 15—167 R **5 Claims**

1. A toothbrush comprising a body, including a handle portion and a brush head portion, bristle-retaining means slidably attached to said brush head portion of said body for permitting reciprocating motion of said bristle-retaining means exclusively in a longitudinal direction with respect to said body, means for restricting the longitudinal motion of said bristle-retaining means between fixed points on said brush head portion of said body, said bristle-retaining means being freely slidably between said fixed points, and a plurality of

bristles rigidly attached to said bristle-retaining means also in a manner for movement exclusively in a longitudinal direction with respect to said body upon said reciprocating motion of said bristle-retaining means, so that said bristle-retaining



means may remain in a substantially fixed position and said plurality of bristles may remain in a substantionally fixed transverse position upon the longitudinal reciprocation of said toothbrush body but are carried by said toothbrush body upon its transverse reciprocation.

3,879,792

WINDSHIELD WIPER FOR AUTOMOTIVE VEHICLES

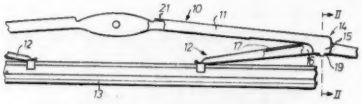
Dietmar Brümmer, Buehlertal; Hans Maier; Werner Schwedhelm, both of Buehl; Helmut Steegmüller, Affalterbach, and Manfred Donauer, Varnhalt, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed May 12, 1972, Ser. No. 252,674

Claims priority, application Germany, June 9, 1971, 2128678

Int. Cl. B60s *1/04, 1/38*

U.S. Cl. 15—250.42 **5 Claims**



3. In a windshield wiper for automotive vehicles, a combination comprising a carrying arm having at least a portion of U-shaped cross-section, said portion of said carrying arm having a pair of first side walls and a first transverse connecting wall; at least one pivot arm of smaller dimensioned U-shaped cross-section and in part received with clearance in said portion of said carrying arm, said pivot arm having a pair of second side walls each inwardly spaced from one of said first walls and a second transverse wall inwardly spaced from said first transverse wall; a pivot connector pivotally connecting said pivot arm with said carrying arm and comprising projecting portions projecting beyond the cross-section of said pivot arm by extending outwardly beyond said second side walls and said second transverse wall, so as to maintain said pivot arm out of contact with said carrying arm; and retaining means provided on edge portions of the side walls of one of said arms for preventing separation of said arms and said pivot connector, said retaining means being maintained out of contact with the other of said arms by said projecting portions.

3,879,793

ANTI-WINDLIFT LOW PROFILE WINDSHIELD WIPER BLADE

Paul D. Schlegel, Boulder, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Jan. 24, 1974, Ser. No. 436,276

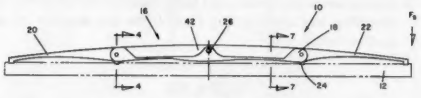
Int. Cl. B60s *1/38*

U.S. Cl. 15—250.42 **6 Claims**

1. In a windshield wiper having an elastomeric wiping element secured to a backing member, and a pressure-distributing superstructure having means engaging the backing member at a plurality of points therealong, an improved low silhouette anti-windlift superstructure comprising:

a primary yoke fabricated of plastic of solid cross-section and having a top surface having a ramp portion forming an acute angle with respect to a plane extending substantially parallel to the surface to be wiped;

a pair of cantilevered secondary yokes each having an inboard end portion pivotally connected to one end of the primary yoke forming therewith an articulated low profile superstructure; and



spring means associated with the pivotal connections between the primary and secondary yokes urging the secondary yokes toward the backing member and the surface to be wiped;

said means for engaging the superstructure and backing member comprising a plurality of straddle hooks permitting a sliding engagement therebetween and wherein at least one inwardly disposed straddle hook is positioned substantially directly below the area of said pivotal connection between the primary yoke and a secondary yoke.

3,879,794

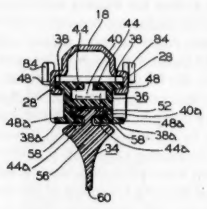
WINDSHIELD WIPER BLADE ASSEMBLY

Hobart V. Roberts, Jr., Elma, N.Y., assignor to Trico Products Corporation, Buffalo, N.Y.

Filed Feb. 22, 1974, Ser. No. 444,862

Int. Cl. B60s *1/04, 1/38*

U.S. Cl. 15—250.42 **14 Claims**



8. A refill unit for a wiper blade assembly comprising an elongate squeegee element of elastomeric material, an integrally formed backing strip of plastic material for supporting said squeegee element and means for retaining said squeegee element in assembled relationship with said backing strip; said backing strip comprising a pair of elongate channel bodies arranged back to back, each channel body having an elongate side rail formed on each leg thereof and extending laterally outwardly of the channel body, the side rails on each channel body being co-planar, the distance between the outer longitudinal edges of the side rails formed on one channel body being greater than the distance between the outer longitudinal edges of the side rails formed on the other channel body, said squeegee element being alternatively receivable in one or the other of said channel bodies, the side rails on the unused channel body being slidably receivable between the opposed claws of a super-structure.

3,879,795
METHOD AND APPARATUS FOR CLEANING THE INNER AND/OR OUTER SURFACES OF A CUVETTE

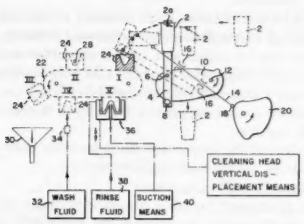
Martin Gfeller, Aarwangen, Switzerland, assignor to Greiner Electronic AG, Langenthal, Switzerland

Filed June 13, 1973, Ser. No. 369,506

Claims priority, application Switzerland, June 14, 1972, 8914/72

Int. Cl. A47l *5/38*

U.S. Cl. 15—302 **12 Claims**



1. Apparatus for cleaning the transparent cuvette of a fluid specimen photometric testing system, comprising

a. means for supporting the cuvette in an inverted condition;

b. a cleaning head member containing at its upper end an upwardly directed open-topped chamber for receiving said inverted cuvette, said head member including bottom, side and end walls defining said chamber;

c. suction means extending from the bottom wall of said chamber upwardly within the cavity contained in said cuvette, said suction means containing a vertical suction passage having a first orifice at its upper end adjacent and spaced from the bottom portion of the cuvette cavity;

d. means for initially supplying a fluid in said chamber adjacent the upper portion of the space between said cuvette and said side walls; and

e. means subsequently connecting the lower end of said suction passage with a vacuum source, whereby said fluid is drawn by suction downwardly along the cuvette outer wall surfaces, inwardly along the end surface of the cuvette, upwardly along the inner wall surfaces of the cuvette cavity, and downwardly through said suction passage, thereby to clean the outer and inner surfaces of the cuvette.

3,879,796
BED STABILIZING ASSEMBLY

Albert J. Whyte, Springfield, Mass., assignor to Standex International Corporation, Andover, Mass.

Filed Oct. 23, 1973, Ser. No. 408,496

Int. Cl. A47c *21/00*

U.S. Cl. 5—328 **9 Claims**

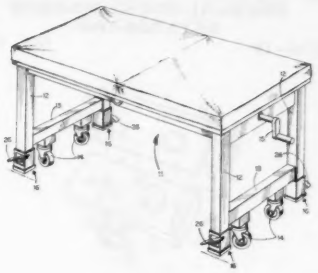
1. A bed stabilizing assembly for each leg of a bed, the bed normally resting upon casters relatively adjacent each leg, said stabilizing assembly comprising:

a sleeve slidingly surrounding the bottom end of said leg, said sleeve having an opening in one side thereof formed of a plurality of interconnected flat edges, the edges of said opening acting as a cam follower;

a cam having a plurality of mutually perpendicular flat sides adapted to bear against said edges of said opening, said cam being pivotally mounted to one side of said leg and positioned within said opening in said sleeve; and

means for rotating said cam;

whereby when said cam is rotated in one direction, said sleeve is formed downwardly so as to make contact with the floor and to lift the adjacent caster off the floor, and when such cam is rotated in the opposite direction, said



sleeve is forced upwardly permitting said bed to rest on the caster.

3,879,797
SUCTION CLEANER

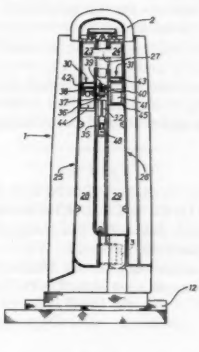
Rene Principe, Wil, and Jakob Hugentobler, Braunau, both of Switzerland, assignors to A. Sutter AG, Munchwilen, Switzerland

Filed May 7, 1973, Ser. No. 357,639

Claims priority, application Switzerland, Apr. 17, 1973, 5541/73

Int. Cl. A47l *5/32*

U.S. Cl. 15—334 **17 Claims**



1. A suction cleaner having a dust suction part means,

first and second suction pipes connected to said dust suction part means, the first suction pipe having a brush nozzle part means,

a valve device connected to the first and second suction pipes,

the valve device having two valve flaps of which the first valve flap is situated in one of the two suction pipes and the second valve flap is situated in the other of the two suction pipes, and

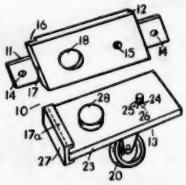
means mechanically coupling with the two valve flaps so that one valve flap closes its associated suction pipe when the other valve flap in its suction pipe is arranged in an open position at least approximately parallel to the suction fluid flow along its suction pipe

the opposing force to be applied for changing the position of the valve flaps can be transmitted from the guide arm by the cable pull means to the means mechanically coupling with the two valve flaps for moving the valve flaps.

3,879,798
ROLLER FOR LUGGAGE AND OTHER OBJECTS

Lester S. Krulwich, 241 Central Park West, New York, N.Y. 10024

Filed Jan. 11, 1974, Ser. No. 432,552
Int. Cl. B60b *33/00*
U.S. Cl. 16—18 4 Claims

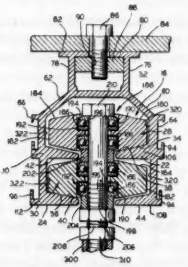


1. An apparatus on which to roll luggage and other objects comprising an elongated plate capable of being fastened under said luggage and other objects, said elongated plate being made of magnetically attractable material, provided with a flat member underneath containing a fastening element toward one lateral side not materially extending outward beyond its bottom surface and a small space between the other lateral side and the elongated plate, said plate and flat member being sufficiently thin and flat so as not to upset the standing position of the luggage and objects when attached, a roller member with a roller under a platform containing a releasable fastening element that registers up into the fastening element in the flat member toward that lateral side, and extending upward and over from the rim of the other lateral side a relatively thin fastening element removably and compactly into said small space between the elongated plate and flat member, said flat member containing a cavity extending upward to the bottom surface of said magnetically attractable plate member, a magnet attached to and projecting from the said platform on the roller member, said magnet adapted and positioned to be removably insertable into said cavity in the flat member and to cling firmly to said plate and flat members.

3,879,799
MULTIDIRECTIONAL SUSPENSION SYSTEM FOR OPERABLE PARTITIONS

Charles E. Williams, Janesville, Wis., assignor to Hough Manufacturing Corporation, Janesville, Wis.

Continuation-in-part of Ser. No. 356,713, May 3, 1973, abandoned. This application Mar. 27, 1974, Ser. No. 455,307
Int. Cl. E05d *13/02*
U.S. Cl. 16—89 10 Claims



1. In an operable panel type top supported partition arrangement for temporarily subdividing room space including a plurality of discrete panels, an overhead track system from which said panels are suspended for movement between a storage position and selected wall forming positions within the room space, with the respective panels each being suspended from the track system by a pair of carriers supporting the panel adjacent the side edges of same, and with the track system defining one or more right angle turns and intersections over which the carriers of at least some of the respective panels are to move when being moved between said positions, the improvement wherein:

said track system comprises a plurality of track sections assembled in end to end relation for transfer of the carriers therebetween for moving the panels between their said positions,

with said track sections each defining a trackway including a pair of vertically spaced rollerway defining ledges disposed one on either side of the respective track sections and an operating slot between said ledges along which the carriers supported by the respective track sections move when the panel supported thereby is moved along such track section,

said ledges of the respective track sections each defining an upwardly facing load support surface,

said carriers each comprising:

a vertical support member disposed between said ledges of the track section supporting the respective carriers and defining a vertical axis extending longitudinally of same, means for anchoring the respective support members to the panel the respective carriers support,

each of said support members having coaxially journalled on same, in vertically spaced relatioon, and for rotation about said axis, a pair of horizontally disposed discs,

with each of said carrier discs defining a downwardly facing load support surface,

and with said surface of the upper of said discs of the respective carriers riding on said surface of the upper of said trackway ledges on one side of said operating slot and said surface of the lower of said discs of the respective carriers riding on said surface of the lower of said trackway ledges on the other side of said operating slot, said surfaces of said discs being of substantially identical frusto-conical configuration at a flat angle relative to the horizontal,

and said surfaces of said ledges having downward, oppositely directed angulation transversely of said track sections that complements the angulation of said disc surfaces,

whereby said support member of each of said carriers is vertically suspended from the track section supporting same and said angulation of said surfaces effects a centering of said support members within said operating slot under the action of gravity, with said discs making a line type rolling contact with their respective ledge supporting surfaces,

with said upper of said carrier discs being free of engagement with the trackway on the other side of said operating slot and the lower of said carrier discs being free of engagement with the trackway on said one side of said slot, whereby said discs roll in opposite directions on the respective ledge surfaces as the panel supported thereby is moved longitudinally of the trackway,

said ledges underlying said discs in proportion to their radii for maintaining said carriers supported within the trackway when crossing the turns and intersections by engagement of said discs with said ledges,

those of said track sections defining the right angle turns and intersections of the track system further defining on said other side of said operating slot a masking ledge at the level of and opposing said lower trackway ledge thereof but spaced therefrom by said operating slot,

said ledges at and across the right angle turns and intersections being disposed in close fitting guiding relation to the support members of the respective carriers up to the intersecting operating slots of the turns and intersections involved for maintaining same centered relative to the

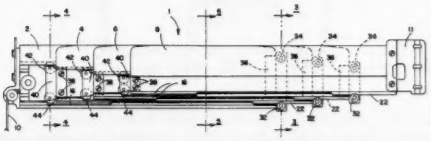
operating slots as the turns and intersections, whereby said discs in passing through said intersections tend to drop a perceptable amount when centered at the intersection, but are retained within the trackway, for providing an indication of their position therein, and the configuration of said disc and ledge surfaces and the rolling action of said discs along said ledges and across the turns and intersections permits ready camming of the respective discs out of and away from such intersections and turns.

3,879,800

CANTILEVERED TELESCOPIC DRAPERY SUPPORT

Clarence R. Adams, Glendale, Calif., assignor to Tridair Industries, Redondo Beach, Calif.

Filed Sept. 24, 1973, Ser. No. 399,901
Int. Cl. A47h *1/04;* **E05d** *13/02*
U.S. Cl. 16—96 D **5 Claims**



1. A cantilevered telescopic drapery support comprising:

a. an innermost, outermost and one or more intermediate sections with the innermost section being a support section, the intermediate section and outermost sections being telescopic sections, and each intermediate section also being a support section for a subsequent telescopic section;

b. means for telescoping said telescopic sections inwardly and outwardly;

c. each section comprising an upright linear wall;

d. the innermost and each intermediate section having opposing channel-like support guides extending longitudinally along said linear wall;

e. each telescopic section having upper and lower tongue-like rails;

f. each telescopic section being telescopically nested within a previous section such that the tongue-like elements of the telescopic section are carried within the opposing support guides of the previous section;

g. the wall of each section when telescopic assembled being overlaid one upon the other with the upper end of each section wall being at the same relative height and adapted to slidably support drapery hooks;

h. each telescopic section supported within the previous section by a first and second support means;

i. said first support means comprising a first pair of rollers carried on the posterior end of the telescopic section and retained for rolling engagement within the opposing support guides of the previous section;

j. said second support means comprising a post roller fixed adjacent the outer end of the previous section for rolling engagement with the lower tongue-like rail of the telescopic section;

k. the lower of the first pair of male rollers being of a smaller diameter than the upper roller and the post roller being positioned at an elevation to incline the telescopic section upwardly and,

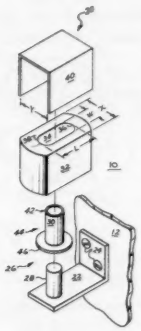
l. said first support means being arranged with respect to said second support means such that as said telescopic section is telescoped outwardly the posterior end of the telescopic section rolls between the support guides toward the post roller in such a manner that the upward angle of inclination of the telescopic section is progressively and proportionally increased.

3,879,801

HINGE ASSEMBLY FOR A REFRIGERATOR DOOR

Amir A. Rashid, and Gerald F. Dodge, III, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Apr. 4, 1974, Ser. No. 457,705
Int. Cl. E05d *7/04*
U.S. Cl. 16—130 **5 Claims**



1. A hinge assembly of a refrigerator door having a hinged edge and an opposed edge, comprising:

a bracket having a pivot post and being attached to a wall of the refrigerator, said pivot post being spaced inwardly of said refrigerator wall and extending generally vertically in the installed position thereof;

a bushing having a slot receiving the pivot post, said bushing being of an elastomeric material and said slot having oppposed slot ends, a length greater than the diameter of the pivot post, and dimensions sufficient for forcibly, slidably engaging said pivot post on opposed sides of said post; and

holding means for maintaining the bushing with the refrigerator door and the bushing slot aligned with its opposed slot ends directed toward respective hinged and opposed door edges.

3,879,802

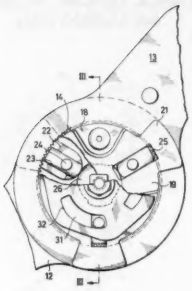
HINGE FITTING FOR ADJUSTABLY CONNECTING A SEAT AND A BACKREST TO EACH OTHER, ESPECIALLY FOR MOTOR VEHICLES

Paul Werner, Remscheid, Germany, assignor to Fritz Keiper, Remscheid-Hasten, Germany

Filed May 29, 1974, Ser. No. 474,428
Claims priority, application Germany, June 1, 1973, 2328022
Int. Cl. E05d *11/10*
U.S. Cl. 16—144 **14 Claims**

1. A hinge fitting for adjustably connecting a seat element and a backrest element, especially for motor vehicle seats, comprising a first hinge member connectable with one of said elements and a second hinge member connectable with the other of said elements abutting with an end portion thereof against one face of said first hinge member; a ring gear having inwardly directed teeth provided on said first hinge member; three radially extending locking bars, provided at the outer ends with teeth adapted to meshingly engage with the teeth of said ring gear, mounted on said second hinge member circumferentially displaced from each other; means fixed to said second hinge member for guiding said locking bars movable in radial direction; first cam means turnable about an axis coaxial with said ring gear and cooperating with said locking bars for moving the same in radially outward direction to bring the teeth thereon in locking engagement with the teeth of said ring gear to thus hold the hinge members in fixed position relative to each other; and second cam means turnable about

said axis and cooperating with said locking bars for moving the same in radially inward direction to disengage the teeth



thereon from the teeth of said ring gear to thus permit angular adjustment of said hinge members relative to each other.

3,879,803

DEVICE FOR REMOVING THE INTERNAL PARTS FROM SLAUGHTERED POULTRY

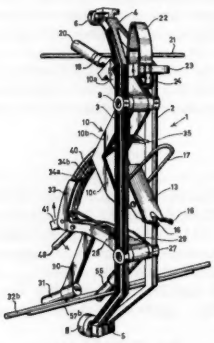
Godefriedus Hendrikus Waltherus Verbakel, Helmond, Netherlands, assignor to Stork Amsterdam N.V., Amstelveen, Netherlands

Filed Jan. 5, 1972, Ser. No. 215,470

Claims priority, application Netherlands, Jan. 7, 1971, 7100142

Int. Cl. A22b *3/08*

U.S. Cl. 17—11 **11 Claims**



1. A device for eviscerating poultry comprising an upright frame having first and second horizontal pivotal axes thereon and one end of said frame being positionable adjacent a bird suspended by its legs, a first bracket pivotally mounted on said first pivotal axis and having one end directed toward said frame one side, a supporting plate for a bird mounted on said one end of said first bracket, a second bracket pivotally mounted on or adjacent to said second pivotal axis and having one end directed toward said frame one side, a spatula mounted on said second bracket one end and being pivotable along an arcuate path to a position over said supporting plate, a third bracket pivotally mounted on or adjacent to said second pivotal axis and having one end movable along a second arcuate path above said second bracket, said arcuate paths having the same curvature, a spoon pivotally mounted on said third bracket one end and pivotable about an axis perpendicular to the path of movement of said spoon, and bracket actuating means for lifting said supporting plate and for moving said spatula and spoon together in an arc above said lifted plate and for withdrawing the spatula while continuing the forward movement of the spoon and for pivoting the spoon downwardly and for withdrawing the downwardly turned spoon so as to carry the entrails of the bird outwardly thereof.

3,879,804

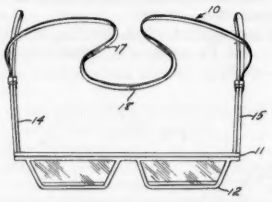
NECK STRAP

Peter Lawrence, New York, N.Y., assignor to L. Lawrence Products, Inc., Corona, N.Y.

Filed Oct. 7, 1974, Ser. No. 512,493

Int. Cl. A44b *21/00*

U.S. Cl. 24—3 C **6 Claims**



1. A neckstrap or similar article defining adjustable closed loops at each end thereof comprising: an elongated strap member formed at least partially from a resinous material of durometer value ranging from 65 to 85, at least one retaining member defining an opening through which one end of said strap member passes to form one of said closed loops; said strap member having an unstressed cross-sectional area which is slightly greater than the area of the corresponding opening in said retaining member, whereby said strap member is resiliently frictionally gripped therein; said loop formed thereby being adjustable by exerting tension upon said strap member to result in attenuating that portion of the strap member lying within said opening permitting relative motion there between, the release of tension serving to permit the attenuated portion to expand to be again retained in relatively fixed position.

3,879,805

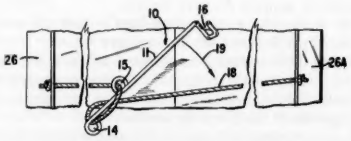
LINE TENSIONER AND BUILDING STRUCTURE

Joseph Clemens Gretter, 119 Seir Hill Rd., Wilton, Conn. 06897

Filed Mar. 2, 1973, Ser. No. 337,527

Int. Cl. A43c *11/08;* **A44b** *21/00*

U.S. Cl. 24—71.3 **4 Claims**



1. In a building structure, the combination comprising a plurality of panels, means for aligning said panels in abutting relationship, and means for locking said panels in their aligned position including a single continuous flexible line such as rope, cable or wire interconnecting the opposed outer portions of the panel assembly and tensioning means in said flexible line, said tensioning means comprising an elongated member having an outer end with a hook thereon, a first opening adjacent the end thereof spaced from said outer end and a second opening spaced inwardly of said first opening in the direction of the elongated member and toward said hook on said outer end, said first and second openings being on opposite sides of the barycentric line of said elongated mem-

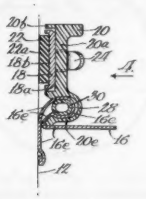
ber and relatively close to said barycentric line, said flexible line passing through said first and second openings, said means on the outer end of said member locking the tensioning means into a locked position when said member is turned and the hook is engaged with said flexible line.

3,879,806

SHOWER CURTAIN EDGE RETAINER

Henry P. Armstrong, Islington, Ontario, Canada, assignor to Diach Products Incorporated, Kitchener, Ontario, Canada

Filed Nov. 5, 1973, Ser. No. 412,587
Int. Cl. A47k 3/14; A44b 21/00
U.S. Cl. 24—73 CH 14 Claims



1. A shower curtain edge retainer for holding a marginal edge portion of a hanging shower curtain in contiguity with a surface area of a bath cove wall, comprising:

a wall attachment bar adapted to be vertically attached to a bath cove wall;

a connecting bar adapted to extend lengthwise of, and in overlying lateral relationship with the wall attachment bar;

means adapted to extend lengthwise of the connecting bar and along a portion of a shower curtain marginal edge, to retain same in overlying relationship with a portion of the connecting bar including a groove opening toward said bath cove wall and a spline to engage said shower curtain marginal edge in said groove with a length of shower curtain exposed to engage said bath cove wall when the connecting bar is secured to the wall attachment bar;

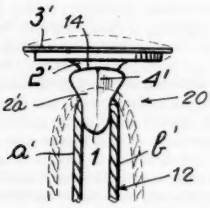
and means for detachably securing the connecting bar to the wall attachment bar.

3,879,807

BUTTON, PARTICULARLY SUITABLE FOR PILLOWS AND MATTRESSES

Roberto Casale, Via Gramsci 6, Cormano, Milan, Italy

Filed Sept. 27, 1973, Ser. No. 401,551
Claims priority, application Italy, July 27, 1973, 27245/73
Int. Cl. A44b 1/18, 13/00
U.S. Cl. 24—102 T 2 Claims



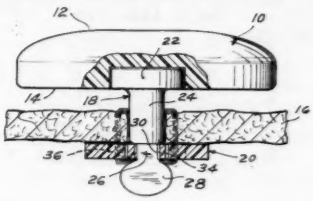
1. A button particularly for pillows and mattresses, comprising a wide base portion, a hook shank connected to said base portion and being curved outwardly therefrom to enclose a hook loop, a spring catch extending from said shank from a location adjacent the end of said shank connected to said base portion and extending into the loop, said shank having an outer leg portion and a widened substantially triangular end in proximity to the portion of said shank adjacent said base portion with the widest portion of the triangular configuration being at the edge of said hook shank including a widened base portion, the edge of said hook shank forming the base of the triangular configuration being in closely spaced relationship to the widened base portion of said shank.

3,879,808

REMOVABLE GARMENT BUTTON

Herbert Alberts, Rua Capitao Luiz Romez 312 (Caixa Postal 561), San Paulo, Brazil

Filed June 17, 1974, Ser. No. 479,791
Claims priority, application Brazil, Feb. 8, 1974, 964
Int. Cl. A44b 1/32, 17/00
U.S. Cl. 24—109 8 Claims



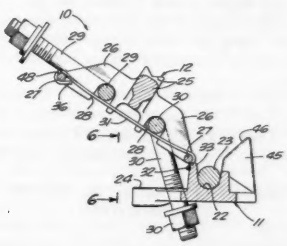
1. A removable button for a garment comprising a head member having a face and a rear; a stud member extending from said head member and having base, central and end sections, said base section being embedded in the rear of said head member and having a circular cross section with a given diameter, said central section having a rectangular cross section with a diagonal having a length not greater than the diameter of the cylindrical section, said end section being a flat plate with two sides substantially coplanar respectively with a first two parallel faces of said dimension in a direction perpendicular to said two faces central section, and having a diameter which is not less than the distance between the other two parallel faces of central section; and a receiving member, said receiving member being a disc, said disc being provided with a receiving slot having a length sufficient for the end section of said stud member to pass through.

3,879,809

HOT CONDUCTOR DEAD END CLAMP

Keith E. Lindsey, 110 El Nido, Pasadena, Calif. 91107, and L. E. Lindsey, 2262 E. Mountain, Pasadena, Calif. 91104

Filed June 3, 1974, Ser. No. 475,394
Int. Cl. H01r 7/26; F16g 11/06
U.S. Cl. 24—135 M 20 Claims



1. A hot conductor dead end clamp having an elongated main body provided with a conductor seating channel lengthwise thereof, an elongated conductor clamping jaw having boss means integral with and projecting laterally from either side of said jaw, first and second U-bolts having threaded legs,

the bight portion of said U-bolts being journalled in a respective one of said boss means, the threaded legs of said first U-bolt being normally held captive in a respective pair of openings through one lateral side of said main body, the threaded legs of said second U-bolt being shiftable laterally into and out of notches opening outwardly laterally of the opposite side of said main body from said first U-bolt, and means for supporting said jaw and said second U-bolt inclined upwardly and outwardly from one lateral side of said main body when said jaw is pivoted to the open position thereof.

3,879,810

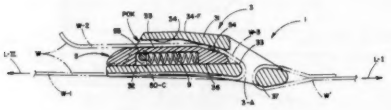
POCKETED SPRING BUCKLE IMPROVEMENTS

Ernest Prete, Jr., Woodland Hills, and Howard Thomas Knox, Hawthorne, both of Calif., assignors to Ancra Corporation, El Segundo, Calif.

Filed Nov. 9, 1973, Ser. No. 414,458

Int. Cl. A44b *11/10*

U.S. Cl. 24—194 **8 Claims**



1. A buckle for securing strap means comprising

a housing having oppositely positioned side wall portions, and oppositely positioned top and bottom wall portions, the opposite ends of said housing being open, the top and bottom wall portions converging towards one of said housing ends,

a shaft attached to said housing and extending between the side wall portions thereof,

a wedge member slidably retained in said housing on said shaft, said wedge member having an elongated slot formed therein, said shaft being fitted in said slot to permit longitudinal movement of said wedge member relative to said housing, said wedge member haing a tapered forward portion, said forward portion facing towards said one of said housing ends towards which the top and bottom housing wall portions converge,

spring means mounted in said housing for resiliently urging the forward portion of said wedge member towards said one of said housing ends, said wedge member having a second elongated slot opening out of a face thereof and extending substantially normally to said first mentioned slot, said spring being fitted in said second slot, one end of said spring abutting against an end wall of said second slot, and

means on said housing for securing a first portion of the strap means thereto, a second portion of the strap means being fitted between the wedge member and the housing, said spring means urging the forward portion of said wedge member against the second portion of the strap means to clamp the strap means between the wedge member and the converging top and bottom housing wall portions.

3,879,811

CONSTRICTIBLE BAND CLIPS

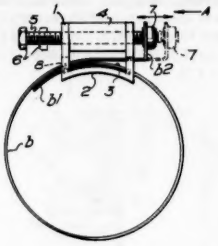
Peter Leverton, 2, West St., South Kirkby near Pontefract, England

Filed May 14, 1974, Ser. No. 469,799

Int. Cl. B65d *63/00*

U.S. Cl. 24—281 **5 Claims**

1. A constrictible band clip having an encircling flexible band and means for tightening and slackening said band, said clip comprising in combination a U-shaped bracket member having its base curved to fit substantially the circumference of a pipe when fitted thereon with its limbs parallel to and extending on opposite sides of said band, said limbs having a pair of opposed openings, a projection on the base of said bracket member within the boundaries of its limbs, an internally screw threaded block bridging the limbs of said bracket member and locatable therein by engagement of extension portions on said block in said openings, said block constituting a non-rotatable nut, an adjuster screw threaded through said block and extending approximately tangentially to the circumference of said band, a first end portion of the band being passed in one direction between the limbs of said U-shaped bracket member



and having a longitudinally spaced series of apertures or recesses by which it can be engaged for longitudinal adjustment with said projection on the base of the bracket member, and the opposite end portion of said band being passed in the opposite direction between said limbs and overlying said first end portion and carrying a bearing member to which the nose of said adjuster screw is rotatably attached, said opposite end portion of the band passing close above said projection for holding said first end portion of the band in engagement with said projection when said band is tensioned.

3,879,812

HOOKS

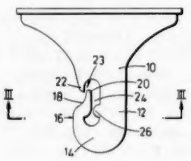
Colin W. F. Clinch, Woodley, England, assignor to ITW Limited, Slough, Buckinghamshire, England

Filed Apr. 3, 1974, Ser. No. 457,514

Claims priority, application United Kingdom, May 11, 1973, 22640/73

Int. Cl. A44b *1/18*

U.S. Cl. 24—230.5 TP **2 Claims**



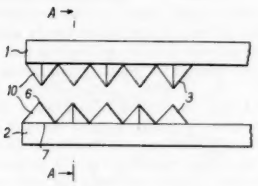
1. A molded plastic upholstery button for receiving a loop of a cord comprising a head, a shank having a body which extends axially from said head and which has a terminal portion that extends back toward said head from a bight segment of said shank with said terminal portion beginning at said bight segment, a tongue formed on the end of said terminal portion which extends toward said head in said axial direction, a stop positioned outwardly of said tongue and extending from said head in said first direction to a point adjacent said tongue so as to form an entrance gap that has a width that is less than the thickness of said cord, there being an open channel of substantially uniform thickness which is of approximately the same width as said cord, said channel leading generally in said first direction from said first gap inwardly of said tongue and said terminal portion and away from said head to the end of said channel at said bight portion and a protuberance extending from said shank toward said terminal portion at a point adjacent said end of said channel to form a locking gap of a width which is less than the thickness of said cord so that said cord may thereby be secured into place at said end of said channel.

3,879,813

CLAMP

David William Shadwell, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jan. 4, 1974, Ser. No. 430,625
Claims priority, application United Kingdom, Feb. 8, 1973, 6184/73
Int. Cl. A44b 21/00
U.S. Cl. 24—243 GC 3 Claims



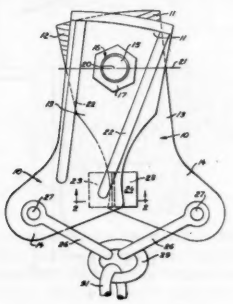
1. A clamp for gripping fabric including an upper and a lower jaw, each comprising at least two longitudinal rows of teeth with gaps between the teeth in any one row, said teeth in any one row being in transverse register with said gaps in an adjacent row and each tooth having an apex for penetrating fabric, and in which the teeth in the upper jaw mesh into the gaps between the teeth in the lower jaw and vice versa, each tooth being in the form of a triangular pyramid with one side of the base triangle parallel to the longitudinal axis of the jaw in which it is located and the apex situated vertically above that side to form a vertical face, adjacent rows of teeth being arranged with the vertical faces of the teeth in each row facing in opposite directions.

3,879,814

CLAMP

William Mojelski, Grand Forks, British Columbia, Grand Forks, British Columbia, Canada, assignor to Mo Clamp Co. Ltd., Delta, British Columbia, Canada

Filed Feb. 25, 1974, Ser. No. 445,168
Int. Cl. A44b 21/00
U.S. Cl. 24—248 C 3 Claims



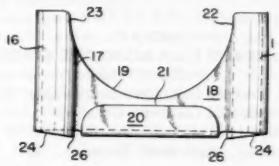
1. A clamp comprising:
a. a pair of elongated clamping parts disposed in crossed relationship on a pivotal axis,
b. each of the clamping parts having, at one end, clamping jaws presenting parallel, planar clamping faces normal to the pivotal axis and, at an opposite end, elongated lever portions,
c. connecting means connecting the clamping parts at the pivotal axis for pivotal movement about said axis between a position of angularity and a position of substantial parallelism and for rocking movement about a transverse axis,
d. projections extending from inner surfaces of the clamping parts, the projections having sloped camming faces adapted for mutual camming engagement when the parts are swung from the position of angularity to a position of substantial parallelism, for spreading the lever portions apart so as to move the clamping jaws into gripping engagement with a work piece.

3,879,815

CLAMP ASSEMBLY

William E. Dowling, 1813 Glen Oak La., and John E. Heckethorn, 731 Wade Hampton Rd., both of Dyersburg, Tenn. 38024

Filed Oct. 25, 1973, Ser. No. 409,731
Int. Cl. B01j 6/00
U.S. Cl. 24—277 7 Claims



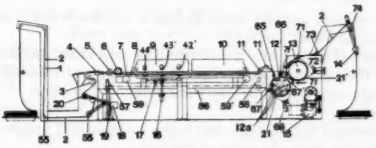
1. A clamp assembly comprising a U-bolt having a bight and a pair of legs, a pair of tubular portions slidable axially on said legs, a saddle web integral with and spanning the space between said tubular portions, and securing nuts threaded on the free ends of the bolt legs for drawing up against the adjacent ends of the tubular portions, each tubular portion having an axially extending terminal edge directed toward the adjacent face of the saddle web, and the nut-adjacent end edge face of each tubular portion being a spiral rise cam rising toward the nut in the direction of its drawing up rotation.

3,879,816

MACHINE FOR FINISHING TEXTILE MATERIAL, ESPECIALLY KNITTED FABRIC, IN A CONTINUOUS MANNER

Mario Monti, Via G. Marconi 108, Thiene, Italy

Filed Dec. 12, 1972, Ser. No. 314,439
Claims priority, application Italy, May 20, 1972, 24628/72
Int. Cl. D06c 3/02
U.S. Cl. 26—52 9 Claims



1. Machine for finishing textile material, especially knitted fabric, in a continuous manner comprising, in combination, feeding means for feeding the fabric in longitudinal direction and comprising elongated support means, two pairs of gears turnably mounted on said support means spaced in longitudinal direction of the latter, and two endless transversely spaced chains extending about and respectively driven by said gears and provided with pins for engaging the fabric in the region of the opposite edges thereof; a pair of drums turnably mounted on said support means spaced in longitudinal direction of the latter and an endless porous belt extending about said drums to be driven thereby and having an upper run downwardly spaced a small distance below the fabric transported by said feeding means; a vaporizing apparatus comprising a first hood located above the fabric, means for feeding vapor upwardly

through said belt conveyor in the region of said hood, heating means within said first hood, and suction means communicating with the interior of said first hood; at least one heat-fixing zone comprising a second hood located above said fabric downstream of said first hood, heating means within said second hood and suction means communicating with the interior of said second hood; a calendering cylinder turnably mounted on said support means downstream of said second hood and including heating means within said calendering cylinder for heating the outer surface thereof; means for maintaining the fabric in close contact with said outer surface of said calendering cylinder; decatizing cylinder turnably mounted on said support means downstream of said calendering cylinder and including a suction device communicating with the interior of said decatizing cylinder; means for pressing the fabric against the outer surface of said decatizing cylinder and means for driving said gears, drums, calendering and decatizing cylinders.

3,879,817

APPARATUS FOR UNCURLING THE EDGES OF A FABRIC WEB

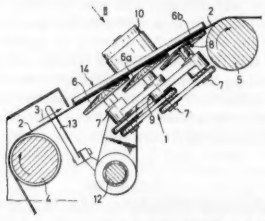
Arno Becker, Freudenstadt, Germany, assignor to Bruckner Trockentechnik KG, Leonberg, Germany

Filed Apr. 11, 1973, Ser. No. 349,934

Claims priority, application Germany, Apr. 27, 1972, 2220606

Int. Cl. D06c *3/06, 25/00*

U.S. Cl. 26—54 **4 Claims**



1. Apparatus constructed to fit close to an inlet roller of a fabric treating device, for gently unrolling a downwardly curled edge of a fabric web without exerting any appreciable pull on the web, comprising a plurality of overlapping rotatable, driven contact discs arranged beneath each edge of the web,

each of said contact discs having a relatively flat frusto-conical upper surface,

the axis of each contact disc being located closely adjacent to the corresponding edge of the web, and forming an acute angle with the forward-extending portion of the web,

the forward half of each disc being substantially tangent to the web along the edge of the web,

and a member which gently holds the web down against the forward half of each disc, consisting of a cover mounted on hinges located substantially in the plane of the web and resting on the web above the discs.

3,879,818

COFFIN KIT

William Arnold Rowland, Toronto, Ontario, Canada, assignor to Rowco Limited, Toronto, Ontario, Canada

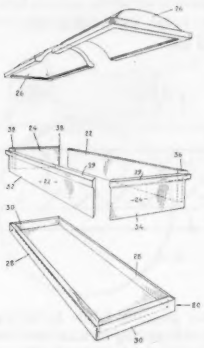
Filed July 5, 1973, Ser. No. 376,732

Claims priority, application Canada, July 11, 1972, 146805

Int. Cl. A61g *17/00*

U.S. Cl. 27—7 **12 Claims**

1. A coffin kit comprising a base in the form of a tray having raised sides and ends, a tub that fits snugly within the tray between the raised sides and ends thereof, and a lid for the tub; the tray, tub and lid all being of rigid moulded plastic material having a low density core and a high density mar resistant skin; the base and its raised sides and ends comprising a one-piece section, the tub comprising two one-piece side



sections and two one-piece end sections, and the lid comprising two one-piece lid sections; the side and end sections having mitred ends, adjacent mitred ends fitting one against another to form corners when the side and end sections are assembled together.

3,879,819

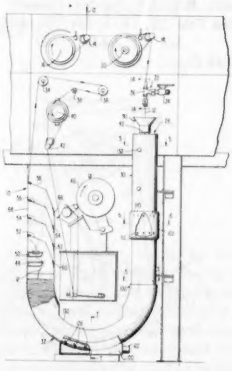
HEAT-SETTING MEANS IN A THERMOPLASTIC YARN REBOUND TEXTURIZING APPARATUS

Lloyd M. Guenther, Severna Park, Md., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 28, 1973, Ser. No. 429,057

Int. Cl. D02g *1/16*

U.S. Cl. 28—1.4 **5 Claims**



1. In bounce crimping apparatus for texturizing multifilament thermoplastic yarn including;

a yarn texturizing chamber having an inlet, a fluid outlet longitudinally aligned with said inlet, and a lateral yarn outlet,

means for introducing a heated fluid into said yarn texturizing chamber for drawing yarn into said chamber,

a foraminous surface transversely positioned across said fluid outlet of said chamber, said heated fluid introduced into said chamber for drawing yarn into said chamber further serving to hurl the yarn against said foraminous surface to axially compress and crimp the yarn filaments

and rebound the yarn through said lateral outlet of said yarn texturizing chamber, and

means for heat treating the crimped yarn to heat set the yarn while maintaining the yarn substantially free from longitudinal tension, said means for heat treating including a J-tube into one end of which yarn is fed substantially continuously and from the other end of which yarn is withdrawn substantially continuously and within which a body of yarn moves slowly from one end to the other to permit heat treatment thereof on a continuous basis,

the improvement comprising:

means positioned between said lateral yarn outlet of said texturizing chamber and said J-tube for directing the yarn from said texturizing chamber into an inlet end of said J-tube substantially along a central longitudinal axis thereof; and

a generally upright inlet portion of said J-tube having a defined internal cross-sectional area selected in accordance with the size of the yarn being processed such that approximately 0.5 to 0.9 square inches of tubular cross-sectional area are provided for each 100 denier of yarn being texturized, wherein said inlet portion of said J-tube is large enough in cross section for accommodating a substantial body of yarn to be heat treated and thereby insure movement of the yarn in a loose substantially untensioned mass downwardly through the interior of the J-tube under the influence of gravity and wherein said inlet portion of said J-tube is concomitantly small enough in cross section so as to dynamically constrain against lateral tumbling a conical pile of incoming yarn at the top of the descending mass of yarn being heat treated with the tube.

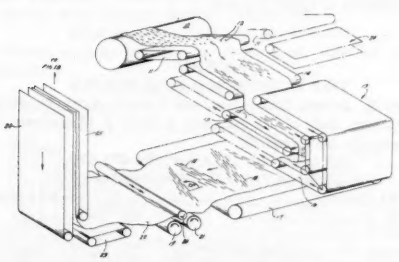
3,879,820
APPARATUS FOR PRODUCING NON-WOVEN PAPERMAKERS FELT

Lowell G. Grieves, Lacon, Ill., and William S. Wightman, Niskayuna, N.Y., assignors to Albany International Corporation, Albany, N.Y.

Division of Ser. No. 205,009, Dec. 6, 1971. This application July 16, 1973, Ser. No. 379,324

Int. Cl. D04h *18/00*

U.S. Cl. 28—4 R **4 Claims**



1. Apparatus for producing a papermakers felt including in combination a fiber carding means, a first apron for receiving a web of fibers from said fiber carding means, a primary lapper top apron, a primary four ply lapper adjacent said primary lapper top apron for receiving a web therefrom and performing four lapping operations to produce a web of four fiber layers, a first intermediate apron at the output end of said primary lapper, first consolidation means between said primary lapper and said first intermediate apron whereby the four fiber layers are consolidated into a homogenious sheet, a second intermediate apron, said first and second intermediate aprons being substantially horizontal, parallel vertical aprons for receiving a web from said first intermediate apron and delivering it to said second intermediate apron, a feed-through apron, a secondary four ply lapper, means for producing a tapered feathered edge on the web disposed between said secondary lapper and said feed-through apron whereby web from said feed-through apron is passed to said secondary lapper, said secondary lapper producing four plies of web received therein said first apron being movable between a first position whereby web therefrom is passed thereby to said primary lapper top apron and a second position whereby web therefrom is passed thereby to said feed-through apron bypassing said primary lapper and a needling machine providing second consolidation means at the output of said secondary lapper.

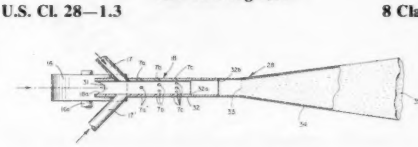
3,879,821
STRAND TREATMENT APPARATUS

Robert K. Stanley, Media, Pa., assignor to Textured Yarn Co., Inc., Kennett Square, Pa.

Continuation-in-part of Ser. No. 405,262, Oct. 11, 1973, which is a continuation-in-part of Ser. No. 343,644, March 22, 1973, and a continuation-in-part of Ser. No. 376,890, July 5, 1973, which is a continuation-in-part of Ser. No. 343,644, , and a continuation-in-part of Ser. No. 124,213, March 15, 1971, Pat. No. 3,753,275, which is a continuation-in-part of Ser. No. 822,429, May 7, 1969, Pat. No. 3,570,083, which is a continuation-in-part of Ser. No. 678,428, Oct. 26, 1967, Pat. No. 3,462,814, and a continuation-in-part of Ser. No. 302,758, July 31, 1963, Pat. No. 3,376,622. This application Feb. 19, 1974, Ser. No. 443,799

Int. Cl. D02g *1/20*

U.S. Cl. 28—1.3 **8 Claims**



1. In apparatus for crimping textile strands by longitudinal compression, having an extrance and an exit for such strand and having means laterally confining the strand for forwardly therebetween including successive entrance, intermediate, and exit portions, and means for injecting fluid into the entrance portion for use in forwarding such strand, the improvement wherein at least part thereof prior to the exit portion is provided with openings therethrough to the exterior and the openings at given distances downstream from the injection means have a total area that increases with increase in such distances.

3,879,822
CRIMPING APPARATUS

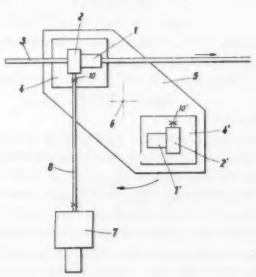
Hans Fleissner, Egelsbach, Germany, assignor to Vepa Aktiengesellschaft, Riehen-Basel, Switzerland

Filed Oct. 9, 1973, Ser. No. 404,401

Claims priority, application Germany, Oct. 6, 1972, 2249122

Int. Cl. D02g *1/12*

U.S. Cl. 28—1.6 **7 Claims**



7. A crimping apparatus which comprises a first stuffer box crimping device including a crimping chamber formed from

two chamber plates arranged in spaced-apart relationship, and a pair of driven feed rollers disposed in front of said chamber; at least one other box crimping device similar to said first stuffer box crimping device and a rotatable stand on which the crimping devices are disposed, said stand being displaced to position one of the crimping devices in an operating position in a train of an apparatus for continuously crimping a textile material and to position the other crimping devices in a reserve out-of-the-way position.

3,879,823

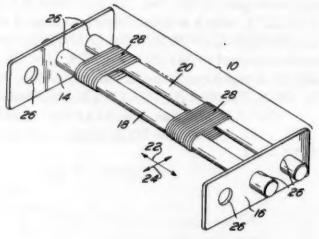
WEAVING APPARATUS METHOD OF USING AND RESULTING TOY

Robert W. Lamb, 147 Ardmore Ave., Haddonfield, N.J. 08033

Filed Jan. 22, 1973, Ser. No. 325,406

Int. Cl. D03d *29/00*

U.S. Cl. 28—15 **14 Claims**



1. A weaving apparatus for constructing a woven toy from yarn, comprising:

a. a pair of longitudinally extended dowel members extending in a straight line manner between opposing ends of each of said dowel members, said yarn being wound around said dowel members in a helical transverse direction to provide a plurality of yarn loops;

b. a pair of templates having a plurality of openings for insertion of said dowel members, each of said dowel members being inserted into said openings on opposing ends of said dowel members, said dowel members being positionally located substantially parallel each to the other after insertion into said openings, each of said dowels having a contour dimension substantially equal to said openings in each of said templates for providing a force of said opposing ends of each of said dowels into said openings of said templates

c. wire means extending around all of said yarn loops in a closed contour, said wire means being secured to an upper strand and a lower strand of each of said yarn loops.

3,879,824

WARP TYING MACHINE

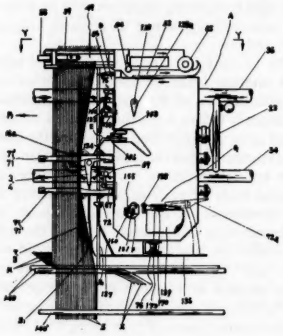
Kazuo Mizuno, 3-17-2 Mikasadori, Kasamatsu-cho, Hashima-gun, Gifu Prefecture, Japan

Filed Dec. 13, 1973, Ser. No. 424,310

Int. Cl. D03j *1/18*

U.S. Cl. 28—49 **12 Claims**

1. A warp tying machine comprising a machine body, old and new warp yarn gripping means projecting from said body for gripping old and new warp yarns in side by side positions, lease rod means positioned below said yarn gripping means and projecting from the machine body in the same direction for guiding the warp yarns in movement toward said machine body, yarn drawing means movable along said least rod means for drawing old and new warps along said lease rod means toward said machine body to stand-by positions, a yarn drawing hook mounted on said machine body and movable in a path of revolution around said machine body, said path including said stand-by positions, yarn cutting means on said body having means movable around said warp yarns when they are in the stand-by positions for engaging said yarns and positive action cutting means for cutting the engaged yarns, yarn tying means on said body along the path of said yarn drawing hook for receiving the old and new warp yarns which have been cut and tying them together, a first yarn detecting device having detecting elements projecting from said machine body for detecting whether the advance of the machine



toward the old and new warp yarns has reached the positions of such yarns and means coupled to said detecting elements for stopping advance of said machine only when both an old and a new warp yarn have been detected, and a second yarn detecting means having feeler means projecting from said machine body for detecting the presence of said yarns in said stand-by positions and having means actuated by said feeler means for blocking movement of said machine when a yarn is not detected in either position.

3,879,825

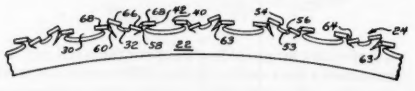
TIRE BUFFING MACHINE BLADES

Wayne E. Jensen, Homewood, and Charles Keith Stanfield, Matteson, both of Ill., assignors to B. & J. Manufacturing Company, Glenwood, Ill.

Filed May 20, 1974, Ser. No. 471,676

Int. Cl. B23d *71/00;* **B26d** *1/00;* **B21c** *37/30*

U.S. Cl. 29—79 **39 Claims**



1. A replaceable blade for the rotating hub of a tire tread removing machine comprising a main body portion adapted for mounting on said hub and a working edge portion, said working edge portion comprising one or more teeth, said teeth having a leading relatively deep primary cutting edge of positive rake, and an outer edge, said outer tooth edge being interrupted by a cut-out presenting a shallower secondary cutting edge of positive rake spaced behind said primary cutting edge, said outer tooth edge further containing a tertiary buffing edge defined by the trailing edge of a slot disposed between said primary and secondary cutting edges.

3,879,826

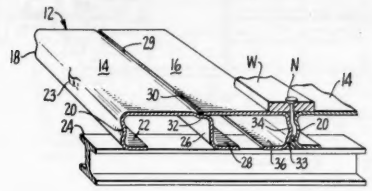
METHOD FOR MAKING NAILABLE STEEL FLOOR PLANKING FOR FREIGHT VEHICLES

Joseph E. Powers, Napa, Calif., assignor to Kaiser Steel Corporation, Oakland, Calif.

Division of Ser. No. 315,333, Dec. 15, 1972, Pat. No. 3,834,105. This application Jan. 21, 1974, Ser. No. 434,766

Int. Cl. B23p *17/00*; B21d *51/00*

U.S. Cl. 29—155 R 10 Claims



1. A method for making a nailable floor plank comprising the steps of providing an elongate sheet steel strip; forming the strip along spaced parallel regions to define a blank having at least first and second integral planar segments, a first web normal to the segments that joins the segments in generally parallel spaced relation, and second and third webs at edges of respective said segments remote from said first web, said webs having a substantially equal extent in a direction perpendicular to the segments; slitting the integral segments to separate the first segment from the second segment along a line in said first segment adjacent and parallel to the first web to form separate plates and define an edge that is spaced from said second web; and rejoining the first segment in substantially coplanar relation to the second segment by joining the edge of the second segment along a line adjacent and parallel to the first web.

3,879,827

ROLL FOR A ROLLING MILL

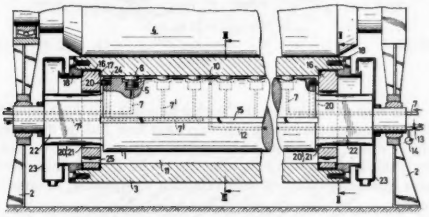
Rolf Lehmann, Mutschellen/AG, Switzerland, assignor to Escher Wyss Limited, Zurich, Switzerland

Filed June 10, 1974, Ser. No. 478,033

Claims priority, application Switzerland, June 15, 1973, 8666/73

Int. Cl. B21b *13/02*

U.S. Cl. 29—116 AD 3 Claims



1. A roll for a rolling mill comprising

a rotatable cylindrical shell;

a fixed bearer within said shell and defining an intermediate space therewith;

a plurality of hydrostatic supporting elements movably mounted in said bearer to support said shell on said bearer, said elements each having at least one surface facing a surface of said shell;

at least one source of hydraulic pressurized medium connected to said elements to press said elements against said shell and simultaneously lubricate said surfaces of said elements and said shell;

means for sealing a region of said intermediate space between said shell and said bearer and surrounding said elements from the remainder of said space;

a discharge pipe communicating said region with the exterior of said roll to expel hydraulic medium from said region; and

a throttle member in said discharge pipe for setting a predetermined back-pressure in the hydraulic medium in said region.

3,879,828

METHOD OF MAKING A ROLLER ASSEMBLY

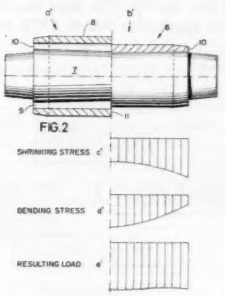
Alex Troost, Nizzaallee 57, 51 Aachen, Germany

Filed Mar. 21, 1974, Ser. No. 453,301

Claims priority, application Germany, Mar. 27, 1973, 2315090

Int. Cl. B23p *11/00*, *11/02*

U.S. Cl. 29—148.4 D 13 Claims



1. A method for producing a composite body having at least two members by shrinking a jacket onto a core, said body having a given length over which said composite body is subject to varying stresses, comprising providing said core with given outer dimensions, providing the jacket with given inner dimensions, selecting said inner and outer dimensions to provide an initial gap between said jacket and core prior to said shrinking, said gap having a width depending on said inner and outer dimensions and adapting the size of said gap width along said length to said varying stresses whereby said gap width constitutes a function of said stresses.

3,879,829

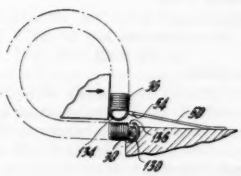
METHOD FOR FORMING LOOPS FROM SPRING.

Joseph T. Gelardi, Yonkers, N.Y., assignor to American Technical Industries, Inc., Mount Vernon, N.Y.

Filed June 3, 1974, Ser. No. 475,922

Int. Cl. B21f *15/04*, *35/00*; B23p *11/02*

U.S. Cl. 29—173 2 Claims



1. A method for joining the opposite ends of a spring to form a loop by interlocking first and second hook portions attached at opposite ends of the spring comprising:

inserting a pin in the first hook portion;

determining whether the angle formed between the longitudinal axis of the spring and the pin falls within a predetermined range to indicate whether the first hook portion is properly oriented with respect to a predetermined direction in which the spring is to be bent to bring the first and second hook portions into an interlocked relationship;

rotating the spring 180 degrees about its longitudinal axis if it is not properly oriented;

bending the spring in said predetermined direction to form a loop with the second hook portion inserted into the first hook portion; and

removing the pin from the first hook portion.

3,879,830

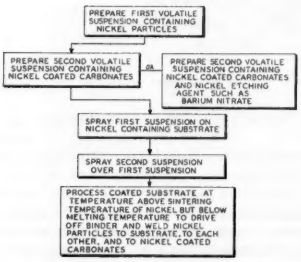
CATHODE FOR ELECTRON DISCHARGE DEVICE HAVING HIGHLY ADHERENT EMISSIVE COATING OF NICKEL AND NICKEL COATED CARBONATES

William E. Buescher, Emporium, Pa., assignor to GTE Sylvania Corporation, Stamford, Conn.

Division of Ser. No. 158,576, June 30, 1971, Pat. No. 3,772,045. This application Dec. 8, 1972, Ser. No. 313,571

Int. Cl. C22c *1/05*

U.S. Cl. 29—182.3 **2 Claims**


PREPARE FIRST VOLATILE SUSPENSION CONTAINING NICKEL PARTICLES
PREPARE SECOND VOLATILE SUSPENSION CONTAINING NICKEL COATED CARBONATES
OR
PREPARE SECOND VOLATILE SUSPENSION CONTAINING NICKEL COATED CARBONATES AND NICKEL ETCHING AGENT SUCH AS BARIUM NITRATE
SPRAY FIRST SUSPENSION ON NICKEL CONTAINING SUBSTRATE
SPRAY SECOND SUSPENSION OVER FIRST SUSPENSION
PROCESS COATED SUBSTRATE AT TEMPERATURE ABOVE SINTERING TEMPERATURE OF NICKEL BUT BELOW MELTING TEMPERATURE TO DRIVE OFF BINDER AND WELD NICKEL PARTICLES TO SUBSTRATE, TO EACH OTHER, AND TO NICKEL COATED CARBONATES

1. A cathode for an electron discharge device comprising: a substantially nickel substrate having thereon a porous layer of sintered powdered material, said powdered material being substantially nickel; and a quantity of emissive material overlying and permeating said porous layer, each particle of said emissive material being nickel coated, the powdered material and said nickel coated particles of emissive material being welded to each other and to the substrate to form a highly adherent coating.

3,879,831

NICKLE BASE HIGH TEMPERATURE ABRADABLE MATERIAL

David V. Rigney, Portland, and Peter W. Schilke, Meriden, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Continuation-in-part of Ser. No. 199,023, Nov. 15, 1971, abandoned. This application July 25, 1973, Ser. No. 382,597

Int. Cl. B22f *3/00, 1/00*

U.S. Cl. 29—182.5 **6 Claims**

1. A homogeneous and porous abradable seal structure consisting principally of γ, γ' and β phases for use in elevated temperature apparatus consisting essentially of, by weight, 60–80% Ni, 2–12% Cr, 1–10% Co, 4–20% Al, up to 3% of a refractory metal selected from the group consisting of yttrium, hafnium and lanthanum and 3–15% inert powder material selected from the group consisting of diatomaceous earth, boron nitride, silicon glass, mica, vermiculite asbestos, molybdenum disulfide, graphite, cobalt oxide, cerium oxide and zinc oxide.

3,879,832

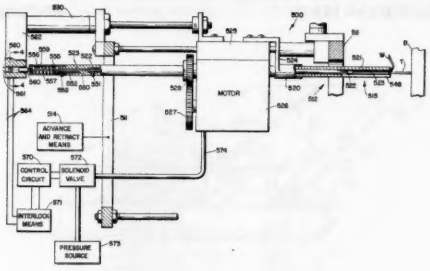
WIRE WRAPPING APPARATUS WITH TERMINAL DETECTOR

John F. Fidiam, 13133 Madonna Ln., Fairfax, Va. 22030

Filed Sept. 27, 1973, Ser. No. 401,390

Int. Cl. H05k *13/04*; **H01r** *43/04*

U.S. Cl. 29—203 B **13 Claims**



1. In a wire attaching apparatus for connecting a wire end to a terminal including a wire attaching tool adapted to relatively move with respect to said terminal into working relationship, and means to activate said tool to provide the connection, the improvement comprising sensing means associated with said tool to detect the proper working relationship of said tool with respect to said terminal and means interconnecting said sensing means to said activating means to assure operation only when said tool is properly positioned.

3,879,833

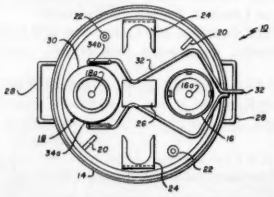
FUSE EXTRACTOR FOR USE WITH FUSE LINKS HAVING A FLEXIBLE LEAD EXTENDING THEREFROM

Robert Lynn Cooper, Creve Coeur, Mo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 25, 1974, Ser. No. 436,648

Int. Cl. H05k *13/00*

U.S. Cl. 29—203 R **10 Claims**



1. A fuse extractor for use with a fuse link having a flexible lead extending therefrom wherein said fuse link is mounted within a fuse tube, and wherein said extractor removes said flexible lead from said fuse tube when said flexible lead separates from said fuse link said extractor comprising, in combination:

a base member adapted to engage one end of said fuse tube and wherein said flexible lead extends from said fuse tube at said base member;

an extension member having a first end engaging said base member and said extension member extending longitudinally of said fuse tube;

a spring having first and second end portions, said first end portion being fixedly mounted to the other end of said extension member and said second end portion receiving said flexible lead; and,

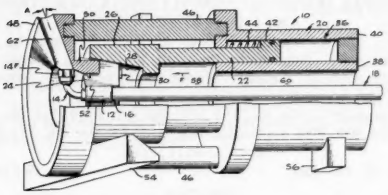
means for fastening the free end of said flexible lead to said base member wherein said spring urges said flexible lead longitudinally away from said fuse tube.

3,879,834

CRIMPING MACHINE

John W. Johnson, Manhattan Beach, Calif., assignor to Wyle Laboratories, El Segundo, Calif.

Filed Apr. 18, 1973, Ser. No. 352,174
Int. Cl. B23p 19/04
U.S. Cl. 29—237 5 Claims



1. Apparatus for crimping a fitting onto an elongated member, comprising:

ram means with a longitudinally movable piston having forward and rearward ends, said piston having a central passageway;

a plurality of crimping dies movable radially together and apart, said piston having a camming surface at its forward portion for engaging said dies to move them radially together when the piston moves longitudinally;

a mount coupled to said ram means, said mount fixing the position of said ram means with the central passageway of the piston extending horizontally;

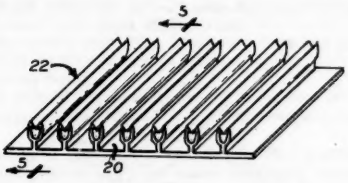
said central passageway extending along the entire length of the piston to receive said elongated member in extention therealong, and said ram means being devoid of obstructions behind the center of said passageway, whereby the elongated member can project completely through the rear of the apparatus.

3,879,835

METHOD OF MAKING MULTI ELEMENT SELF-GRIPPING DEVICE HAVING COOPERATING GRIPPING ELEMENTS

George C. Brumlik, 154 Upper Mountain Ave., Montclair, N.J. 07042

Continuation of Ser. No. 298,906, Oct. 19, 1972, abandoned. This application Sept. 26, 1973, Ser. No. 401,085
Int. Cl. B23p 17/00
U.S. Cl. 29—412 3 Claims



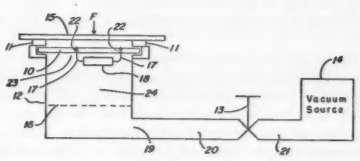
1. Method for making a self gripping device which comprises stiffly mounting a plurality of loops to a base in generally upright position, said loops having a curl interiorly oriented with respect to said loop, horizontally severing said curls relative to said base thereby forming pairs of overlapping, cooperating gripping elements.

3,879,836

PRINTED CIRCUIT CARD COMPONENT REMOVAL METHOD

Harry S. Coffin, King of Prussia, Pa., assignor to Control Data Corporation, Minneapolis, Minn.

Division of Ser. No. 323,558, Jan. 15, 1973, Pat. No. 3,834,605. This application Aug. 2, 1974, Ser. No. 494,141
Int. Cl. B23p 19/02
U.S. Cl. 29—427 5 Claims



1. A method for removing a component, each lead of which is soldered into a hole passing through a printed circuit board, from the board, comprising the steps of:

a. placing the printed circuit board component side down on an upwardly facing opening in a cavity in a vessel, said opening completely surrounding said component;

b. forming a substantially airtight seal between the vessel containing the cavity and the printed circuit board;

c. melting the solder surrounding the leads of said components; and

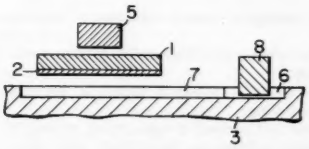
d. applying vacuum to the cavity.

3,879,837

METHOD OF SOLDERING A SEMICONDUCTOR PLATE

Kanji Mizukoshi, Takatsuki; Minoru Andou, Suita, and Hisao Okuno, Kyoto, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Continuation of Ser. No. 277,447, Aug. 2, 1972, abandoned. This application Feb. 19, 1974, Ser. No. 443,670
Claims priority, application Japan, Aug. 7, 1971, 46-59689; Feb. 7, 1972, 47-13741
Int. Cl. B23k 31/02
U.S. Cl. 228—123 3 Claims



1. A method of soldering a semiconductor body to a metal substrate comprising the steps of:

disposing solid solder in a recessed portion of the metal substrate having a groove connected with said recessed portion, and placing the semiconductor body above said groove at a distance from said recessed portion;

heating the assembly of said semiconductor body and said metal substrate to melt the solder disposed in said recessed portion and supply melted solder from the recessed portion to the bonding surfaces of said semiconductor body and said metal substrate through said groove.

3,879,838
METHOD OF MANUFACTURING A BONDED ELECTRICAL CONTACT FOR THERMOELECTRIC SEMICONDUCTOR ELEMENT

Norman C. Miller, Woodland Hills, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 627,170, March 30, 1967, abandoned. This application July 8, 1971, Ser. No. 160,941
Int. Cl. B23k *31/02*
U.S. Cl. 228—180 **11 Claims**

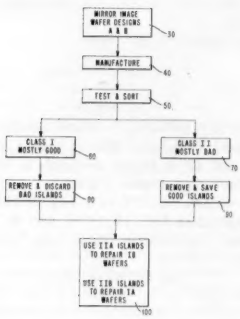
1. A method of bonding a thermoelectric material to an electrical shoe to form a thermoelectric article which comprises:

providing upon a surface of said shoe a thin adherent layer of a diffusion barrier metal selected from the class consisting of iron, tungsten, molybdenum, and niobium, and diffusion bonding a surface of said barrier metal to a surface of said thermoelectric material at a coordinated elevated temperature and pressure to form said thermoelectric article.

3,879,839
METHOD OF MANUFACTURING MULTI-FUNCTION LSI WAFERS

Joseph C. Logue, Poughkeepsie, N.Y., assignor to international Business Machines Corporation, Armonk, N.Y.

Filed June 4, 1973, Ser. No. 367,093
Int. Cl. H011 *7/64*
U.S. Cl. 29—574 **10 Claims**



1. In a method for manufacturing a multifunction wafer, the steps of:

manufacturing multi-island wafers in accordance with a first design;

manufacturing multi-island wafers in accordance with a second design;

said first and second designs being related in that each contains at least one island that, with respect to input-output pads, is the mirror image of an island on the other design;

testing said wafers;

sorting from said tested wafers a first group for which said one island is inoperative and a second group for which said one island is operative;

electrically isolating said one island from the remainder of a wafer A in said first group while leaving its associated input-output pads connected to the remainder of the wafer, said wafer A having been manufactured in accordance with said first design;

removing said one island, including its associated input-output pads, from a wafer B in said second group, said wafer B having been manufactured in accordance with said second design;

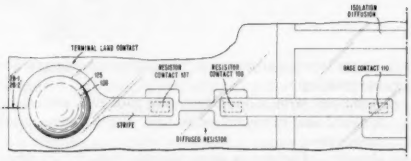
said wafers A and B being, with respect to the input-output pads of said one island, mirror images of each other; and

electrically connecting the input-output pads associated with said one island removed from said wafer B to the input-output pads associated with said one island that was electrically isolated from said wafer A.

3,879,840
COPPER DOPED ALUMINUM CONDUCTIVE STRIPES AND METHOD THEREFOR

Irving Ames, Peekskill; Francois M. D'Heurle, Ossining, and Richard E. Horstmann, Peekskill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 791,371, Jan. 15, 1969, Pat. No. 3,725,309. This application Dec. 4, 1972, Ser. No. 311,578
Int. Cl. B01j *17/00*
U.S. Cl. 29—589 **18 Claims**



1. In a method for increasing the operational lifetime of a microelectronic configuration comprising a solid state device in combination with a given current conductive stripe connected to said device for supplying current thereto wherein failure of operation of said microelectronic configuration occurs through current-induced mass-transport in said given stripe, the steps of

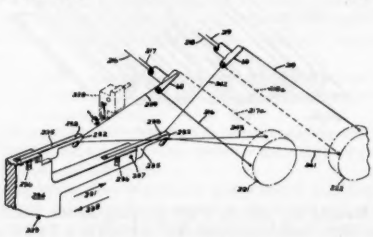
fabricating said given stripe as another stripe comprising an alloy of aluminum with copper additive in the amount of about 0.1 to about 54 percent by weight and having a minimum physical dimension of less than 0.001 inch, and connecting said another stripe to said device for supplying said current thereto,

whereby said microelectronic configuration has said increased operational lifetime because said another stripe is more resistant to said current-induced mass-transport than is said given stripe.

3,879,841
METHOD FOR ESTABLISHING WINDING LEAD WIRES FOR WINDINGS SUPPORTED ON MAGNETIC CORES

Lowell M. Mason, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 189,616, Oct. 15, 1971, Pat. No. 3,812,570. This application Nov. 14, 1973, Ser. No. 415,503
Int. Cl. H02k *15/02*
U.S. Cl. 29—596 **3 Claims**



1. A method of establishing a winding lead wire, for a winding supported on each of two spaced apart stator cores, form

a stationary strand of wire extending from each winding to a winding gun nozzle; the method comprising the steps of advancing lead puller means and intercepting a strand of stationary wire extending from each winding to a winding gun nozzle; retracting the lead puller means and pulling the strands so intercepted in a common direction away from the intercept point for each strand and establishing at least two distinct segments for each intercepted strand with one segment of each strand extending from a winding gun nozzle to a preselected part of the strand and with a second segment of each strand extending from a core winding to the preselected part of the strand; clamping the first segment of each strand and severing each strand between the second segment thereof and the clamped portion of the first segment thereof; and moving the spaced apart cores away from the winding gun nozzles with the second strand segments associated therewith established as a winding lead wire.

3,879,842

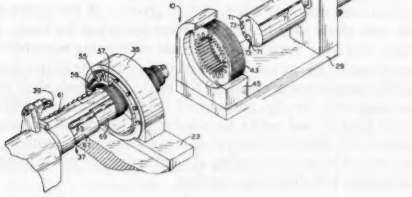
WINDING INSERTING APPARATUS AND METHOD

Hollace R. McKinley, and Leo M. Schlaudroff, both of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Continuation of Ser. No. 306,527, Nov. 15, 1972, abandoned. This application Apr. 8, 1974, Ser. No. 458,461

Int. Cl. H02k *15/085*

U.S. Cl. 29—596 **15 Claims**



1. Apparatus for axially inserting conductive winding turns into a stator core having a bore comprising:

means for supporting a slotted stator core;

winding turn placing means adapted to pass along the bore of a stator core and to place portions of winding turns in slots of the stator core;

a guide member sized for movement through the bore of the stator core while in engagement with the winding turn placing means to lead the thus engaged winding turn placing means along the bore of the stator core; and

guide member supporting structure arranged to hold the guide member in spaced relation to the winding turn placing means.

2. A method of inserting winding turns into placement within a core of dynamoelectric machine comprising the steps of:

disposing in engagement with one another winding turn placing means and guide means for guiding engagement with a core;

relatively moving the placing means and core in guiding relation with the guide means toward an aligned relative position;

displacing the winding turns from the winding turn placing means along the core toward a preselected position therein, and relatively moving the guide means and placing means away from one another by moving guide means supporting structure while the guide means is supported thereon.

3,879,843

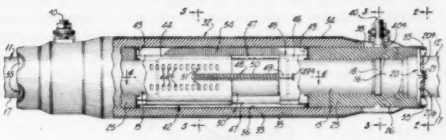
METHOD FOR ASSEMBLING A CABLE JOINT

Francis V. Cunningham, Western Springs, Ill., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.

Division of Ser. No. 163,863, July 19, 1971, Pat. No. 3,781,964. This application Dec. 7, 1973, Ser. No. 422,714

Int. Cl. H01r *43/00*

U.S. Cl. 29—628 **15 Claims**



1. A method of electrically connecting the ends of a plurality of high voltage cables comprising the steps of

placing a first, elongated, tubular elastomeric member in a telescoping relationship over a portion of the end of a first cable of said plurality of cables,

placing a second, elongated, dielectric member in a telescoping relationship over a portion of the end of a second cable of said plurality of cables,

positioning in a first position an elongated unitary means for housing the electrically interconnected ends of said first and second cables formed by a tubular dielectric member having an inner conductive shield disposed on the inner surface of said tubular dielectric member and an outer conductive shield disposed on the outer surface of said tubular dielectric member, said housing means in said first position telescoping at least a portion of the end of one of said first and second cables,

electrically interconnecting the central conductors of said first and second cables and

moving said housing means from said first position to a second position, said inner conductive shield in said second position surrounding the electrically interconnected central conductors of said first and second cables and preventing the occurrence of corona at said interconnected central conductors.

3,879,844

RAZOR BLADES

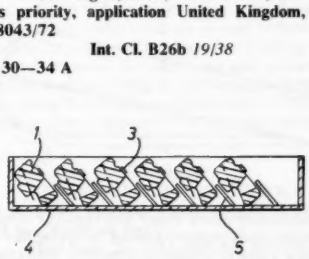
Rupert Griffiths, Maidenhead, England, assignor to Wilkinson Sword Limited, High Wycombe, Buckinghamshire, England

Filed Aug. 1, 1973, Ser. No. 384,750

Claims priority, application United Kingdom, Aug. 15, 1972, 38043/72

Int. Cl. B26b *19/38*

U.S. Cl. 30—34 A **15 Claims**

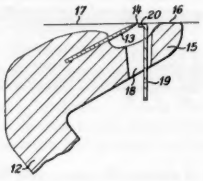


1. A mounted razor blade of the type comprising a moulded plastics support member in which is mounted, at a predetermined angle, a blade member having an exposed cutting edge located at a predetermined spacing from the support member, wherein there is provided on said support member an indicator mark visibly alterable in appearance by use of the blade.

3,879,845
RAZOR WITH A RELATIVELY MOVING BLADE AND ANVIL ASSEMBLY

Bernard Stephen Hansom, Church Brampton, and Keith Douglas Ridler, Fulbourn, both of England, assignors to The Mettoy Company Limited, Northamptonshire, England

Filed Mar. 19, 1974, Ser. No. 452,546
Int. Cl. B26b *19/38*
U.S. Cl. 30—45 9 Claims

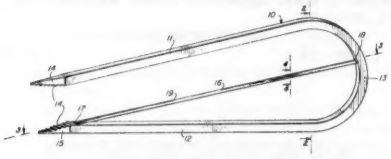


1. A razor comprising a shaving head which includes a fixed guard member having an end surface, means, including the end surface of the guard member, defining a first plane, a cutting blade mounted in the shaving head at a desired shaving angle, an exposed cutting edge on the cutting blade which exposed cutting edge is spaced from the end surface of the fixed guard member and which exposed cutting edge lies in the proximity of the said first plane, an anvil mounted in the shaving head adjacent the cutting edge, a continuous edge on the anvil, and means for effecting relative movement between the cutting blade and the anvil by causing at least one of the cutting edge and the continuous edge to be reciprocated in such manner that the said one edge passes through a second plane which contains the other edge and which is normal to the said first plane, the said continuous edge and the said cutting edge are in close proximity the one with the other at the instant of the said one edge passing through the second plane, and contact between the cutting edge and the anvil is avoided, whilst the cutting edge remains exposed throughout the reciprocation.

3,879,846
SURGICAL SUTURE CUTTER AND REMOVER

William Glenn Allen, Jr., 1811 Floyd Ave., Richmond, Va. 23220

Filed May 29, 1974, Ser. No. 474,178
Int. Cl. B26b *11/00*
U.S. Cl. 30—124 10 Claims

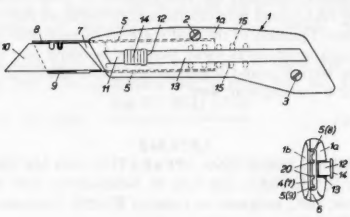


1. A combination suture cutter and remover comprising a unitary forceps body portion formed of spring-like material and including a pair of elongated forwardly converging arms and a rearward bight portion joining said arms, means forming suture gripping jaws on the forward ends of the arms whereby the jaws may be drawn together by a user of the device to grip a suture, and a suture cutting element disposed between said arms and extending longitudinally thereof and having a straight cutting edge in opposing relation to one of said arms, opposite ends of said cutting element being anchored to said bight portion and to the arm facing away from said cutting edge.

3,879,847
CUTTER WITH FORWARDLY AND REARWARDLY DISPLACEABLE BLADE

Dieter Roll, Sedrun, Grisian, Switzerland, assignor to Smart AG, Sedrun, Graubunden, Switzerland

Filed May 2, 1974, Ser. No. 466,456
Claims priority, application Switzerland, May 11, 1973, 6715/73
Int. Cl. B26b *1/08*
U.S. Cl. 30—162 1 Claim

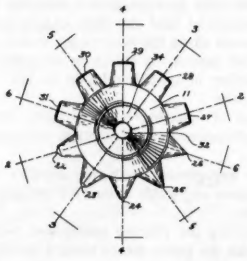


1. A cutter apparatus comprising a cutter handle, a blade slide movably arranged in the cutter handle, means for initiating movement of the blade slide from externally of the cutter handle, a forwardly and rearwardly retractable blade supported at the blade slide, said blade slide possessing a substantially trough-shaped configuration including two side edges for reciving the blade therebetween, said cutter handle being equipped with grooves extending up to an end of the cutter handle from which protrudes the blade, said blade slide being guided with said side edges in said grooves of the cutter handle, said blade slide having a portion receiving the blade, said blade receiving portion of the blade slide being movable outwardly up to a location in front of said end of the cutter handle for the purpose of exchanging the blade, said blade slide being exchangeable for the purpose of being able to use different width blades, said cutter handle being provided with pairs of grooves of different mutual spacing from one another, the grooves of each pair guiding the side edges of blade slides of different width from one another.

3,879,848
MULTIPLE CENTER PUNCH TOOL

Patrick W. Murphy, 126 Dunlop Ave., Tonawanda, N.Y. 14150

Filed Oct. 29, 1973, Ser. No. 410,620
Int. Cl. B26f *1/32*
U.S. Cl. 30—366 10 Claims



1. A multiple center punch tool comprising a substantially circular body having thereabout a multiplicity of adjacent center punch point portions and matching opposed anvils, the point portions and anvils being in respective radial alignments from the central portion of the body, with at least four center

punch points and at least four opposed anvils, with the point portions of the punch being in consecutive sequence according to sizes of the punch points, and with the point portions being on one half of the tool and the opposed anvils being on the other half.

3,879,849

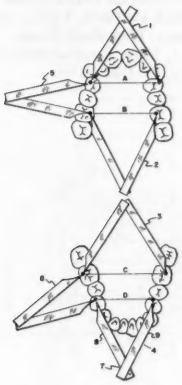
ORTHODONTIC APPLIANCE SYSTEM

Robert Schwartz, 1271 Westfield Ave., Rahway, N.J. 07450, and Morris Goldberg, 14 Vanderventer Ave., Port Washington, N.Y. 10050

Filed Oct. 16, 1972, Ser. No. 297,901

Int. Cl. A61c *7/00*

U.S. Cl. 32—14 R **2 Claims**



1. An orthodontic appliance system comprising at least four gauge members, said gauge members each comprising a handle member interconnected with opposed pointer members that are maintained in a fixed position relative to each other, each pointer member having a terminal portion, the terminal portions of the opposed pointer members of said gauge member defining a cross-arch width distance between anatomical features of ideal maxillary and mandibular arch structures, at least two of said gauge members defining cross-arch width distances between anatomical features of the maxillary arch and at least two of said gauge members defining cross-arch width distances between anatomical features of the mandibular arch.

3,879,850

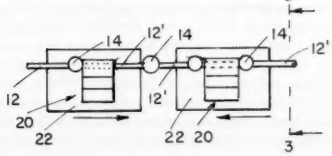
ORTHODONTIC ELASTIC APPLIANCE

Melvin Wallshein, 8645 Bay Pky., Brooklyn, N.Y. 11214

Filed Nov. 29, 1972, Ser. No. 310,574

Int. Cl. A61c *7/00*

U.S. Cl. 32—14 A **13 Claims**



1. An orthodontic elastic appliance comprising a plurality of orthodontic brackets mountable on spaced teeth, each bracket having two opposing surfaces, and an open channel having predetermined cross-sectional dimensions at said surfaces extending between the latter; an elongate elastic strand adapted to be received within said channels; and a plurality of nodules substantially equally spaced along said strand, each nodule having transverse external dimensions greater than said predetermined dimensions of said channel so that said nodules cannot pass through said channel, whereby said strand can be stretched along its length to space two of said nodules a distance substantially corresponding to the distance between two spaced brackets to bridge the latter, with said strand disposed within the channels of the respective brackets, and each nodule being drawn by said strand into an abutting relationship against a surface of the corresponding bracket to thereby cause a force to be applied to said engaged brackets tending to draw the same towards each other.

3,879,851

TURBINE UNIT FOR DENTISTS

Hermann Landgraf, Bensheim, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Dec. 21, 1972, Ser. No. 317,209

Claims priority, application Germany, Dec. 27, 1971, 2164789

Int. Cl. A61c *1/08*

U.S. Cl. 32—26 **7 Claims**

1. A dental pressure air operated turbine unit, comprising a hand piece having a handgrip, a turbine head, means connecting said turbine head with one end of said handgrip, said turbine head having a tool-driving turbine rotor driven by compressed air, a connecting part connected to the other end of said handgrip, a supply line having an end connected to said connecting part, said supply line, said connecting part, said handgrip and said turbine head having interconnected channels for supplying compressed air to said turbine rotor, and means connected with said handgrip for supplying a lubricant to one of said channels for lubricating said turbine rotor, the last-mentioned means having an opening open to outer air and communicating with said one channel and a valve for closing said opening when compressed air is in said channel.

3,879,852

VERTICAL POSITIONING DEVICE

Herman H. Bondi, Portland, Oreg., assignor to Portland Memorial Inc., Portland, Oreg.

Filed Sept. 29, 1972, Ser. No. 293,390

Int. Cl. G01c *15/00, 15/10*

U.S. Cl. 33—180 R **9 Claims**

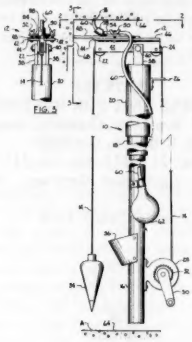
8. A vertical positioning device for determining the position of a point on a structural surface at one elevation in predetermined vertical relation to a known point on a structural surface at another elevation, said device comprising:

a. an elongated support member;

b. a hanger arm extending laterally from said support member adjacent the top thereof, said hanger arm including

means adapted for depending a weighted plumb line from said hanger arm into proximity with the lower of said two points in a position exterior of said support member and sufficiently laterally displaced therefrom so as to permit said plumb line to swing freely from said hanger arm in all lateral directions;

c. a weighted plumb line adapted to depend from said hanger arm into proximity with the lower of said two points;



d. means mounted adjacent the top of said support member in predetermined relation to said hanger arm for relating the top of said plumb line to the higher of said two points; and

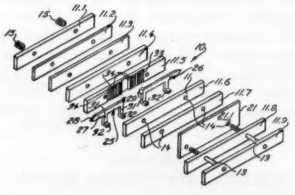
e. pocket means mounted on said support member exterior thereof for retaining said weighted plumb line with respect to said support member when said device is not in use.

3,879,853

MITRE, MARKER AND SET-BACK TOOL FOR DOORWAY TRIM

Stanley James O'Keefe, 1721 Sutherland Ave., North Vancouver, British Columbia, Canada

Filed May 13, 1974, Ser. No. 469,366
Int. Cl. G01b *11/14*
U.S. Cl. 33—189 **3 Claims**



1. A tool for use as a mitre marker and set-back gauge for trim around a doorway comprising:

a. a substantially rectangular body formed of a plurality of elongated, rectangularly shaped leaf members disposed in longitudinally extending side by side relationship and having a flat underface and a side face normal to said underface,

b. means for releaseably clamping the leaf members into a compact bundle,

c. a leaf-like longitudinally extending guide fence projecting out of and perpendicular to said underface having one side surface spaced a predetermined distance from the said side face,

d. a longitudinally extending pointed marker member projecting from an end of the body spaced transversely from said guide fence a distance equal to the distance between the guide fence and the said side face of the body,

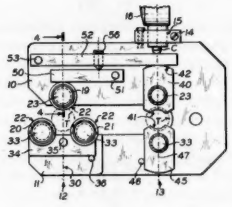
e. said fence and marker members have portions extending between adjacent leaf-like members clampably engaged by the latter when the leaf members are bound in said compact bundle.

3,879,854

SCREW THREAD COMPARATOR GAGING DEVICE HAVING TI-POINT AND SEGMENTAL GAGING MEANS USING A SINGLE INDICATOR

Stanley G. Johnson, West Hartford, Conn., assignor to The Johnson Gage Company, Bloomfield, Conn.

Filed July 1, 1974, Ser. No. 484,557
Int. Cl. G01b *3/14*
U.S. Cl. 33—199 R **16 Claims**



1. A dual comparator for gaging screw threads and adapted to use an indicator comprising a main frame having a first arm and a second arm spaced from the first arm and fixed thereto; a pitch diameter gage including a single gaging element means mounting the single gaging element, on the first arm of the main frame, cooperating gaging means, including a pair of gaging elements spaced from each other, means mounting the cooperating gaging means in cooperative alignment with and spaced from the single gaging element, the three gaging elements being positioned to engage a test thread at three spaced points on the periphery thereof, and means mounting the single gaging element for movement with respect to the first arm towards and away from its cooperating gaging means; a functional gage including a first segmental gaging member, a cooperating segmental gaging member, means mounting the cooperating segmental gaging member on the second arm of the main frame in cooperative alignment with the first segmental gaging member, each segmental gaging member having a concave gaging surface having a portion of a screw thread therein, the first segmental gaging member having an end, the segmental gaging members having a gaging axis through the concave gaging surfaces in gaging position, and means mounting the first segmental gaging member for movement with respect to the first arm towards and away from its cooperating gaging member; indicator mounting means carried by the first arm of the main frame for mounting a single indicator on an indicator axis in alignment with the gaging axis of the segmental gaging members; and lever means including at least one lever, pivot means pivotally mounting the lever means on the main frame, the lever means being operatively located to be engaged by the first segmental gaging member when in gaging position, and the lever means being operatively connected with the movable gaging element of the pitch diameter gage with a lever ratio such that $\frac{2}{3}$ of the movement of the movable gaging element is transmitted to the indicator axis for operation of an indicator.

3,879,855

MANUFACTURE OF NON-DUSTING OR VIRTUALLY NON-DUSTING DYE GRANULES

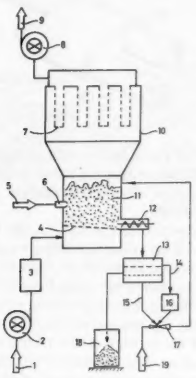
Dieter Weiser, 14 Berliner Strasse, 6700 Ludwigshafen; Dieter Stockburger, 12 Philipp-Kranz-Strasse, 6718 Gruenstadt; Peter Thoma, 26 Carl-Bosch-Ring; Hans-Joachim Klocke, 1b Weidenstrasse, both of 6710 Frankenthal; Hans-Jochen Beyse, 46 Pfalzgrafenstrasse, 6700 Ludwigshafen, and Heinz Thomae, 14d Ludwigshafener Strasse, 6710 Frankenthal, all of Germany

Filed Dec. 19, 1973, Ser. No. 426,371

Claims priority, application Germany, Dec. 29, 1972, 2263968

Int. Cl. F26b *3/08*

U.S. Cl. 34—10 **11 Claims**



1. A process for the manufacture of substantially non-dusting granules of a water-insoluble dye formulation, which process comprises:

producing a pulverulent formulation consisting essentially of said dye in admixture with a dispersing agent as a fluidized bed by introducing a fluidizing gas having a temperature of from 35°C. to 300°C.;

spraying into said fluidized bed an aqueous formulation containing said dye highly dispersed in the water, a dispersing agent and an adhesive compound;

removing a portion of the fluidized material from the bed;

separating a portion of the removed material having the desired particle size; and

recycling at least part of the remaining material of undesired particle size to the fluidized bed.

3,879,856

METHOD AND APPARATUS FOR DRYING PARTICULATE MATERIALS

Peter Joachim Barr, London, England, assignor to Barr & Murphy Limited, London, England

Filed Jan. 30, 1974, Ser. No. 438,017

Claims priority, application United Kingdom, Mar. 23, 1973, 9140/73

Int. Cl. F26b *3/08*

U.S. Cl. 34—10 **11 Claims**

1. A method of drying particulate material comprising the steps of:

passing a main stream of gas around a closed path which includes a circular cross-sectioned drying zone;

introducing moist particulate material into the gas stream at a point outside said drying zone;

introducing said main stream of gas including said moist particulate material into said drying zone at an inlet position close to one end thereof in a direction substantially tangential to the axis of said zone whereby a substantially helical stream of relatively cool gas in the region of the periphery of said zone is established;

introducing a stream of gas at a higher temperature than said main stream of gas into said zone substantially along the axis of said zone at the same end of said zone as the inlet of the main stream of gas so that contact is established between the hot axial gas stream and the relatively cool helical main gas stream carrying moist particulate matter;

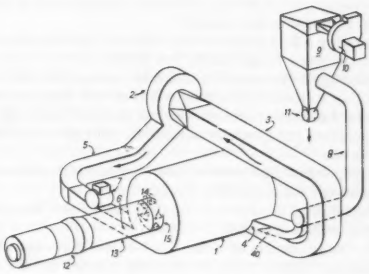
withdrawing all of the gas from the drying zone through an outlet at the opposite end of said drying zone from the inlet in a direction substantially tangential to the axis of said drying zone;

dividing the gas withdrawn from the drying zone through the outlet into a main moist particle carrying stream and a dry particle carrying stream;

recirculating the gas in said moist particle carrying stream to the inlet of said drying zone; and

separating and discharging the dry particles from said dry particle carrying stream.

4. An apparatus for drying particulate material suspended in a stream of gas comprising:



a circular-cross-section manifold having a first gas inlet at one end thereof entering said manifold along the axis of said manifold, a second gas inlet through the side of said manifold at the end of said manifold near said first inlet offset from the axis of said manifold and positioned to direct a stream of gas around the inside periphery of said manifold, and an outlet through the side of said manifold and at the end of said manifold opposite said second inlet also offset from the axis of said manifold;

hot gas supply means connected to said first gas inlet for supplying hot gas to said manifold;

connecting means connecting said outlet to said second inlet to the manifold;

gas circulating means for maintaining the flow of gas throughout the apparatus located in said connecting means;

introduction means for introducing the moist particulate matter to be dried into the gas flowing through said connecting means, said introduction means located in said connecting means between said gas circulating means and said second inlet to the manifold; and

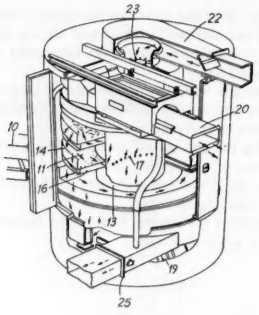
exhaust means for removing the spent gas and dried material, said exhaust means located in said connecting means between said manifold outlet and said gas circulating means.

3,879,857

SPIRAL MOISTURE EQUALISER AND METHOD OF USING SAME

Richard Ernest Gartside Neville, Salisbury, England, assignor to AMF Incorporated, White Plains, N.Y.

Filed Feb. 27, 1974, Ser. No. 446,250
Int. Cl. F26b *3/08*
U.S. Cl. 34—10 **18 Claims**



1. A method of providing particulate material with the temperature and moisture content thereof adjusted to desired levels, comprising the steps of

providing a flow of particulate material and simultaneously providing a recirculating flow of air,

adjusting the temperature and relative humidity of the flow of air to levels to be in equilibrium with the temperature and humidity of the particulate material when the temperature and humidity of such material are at the desired levels,

passing the air flow with adjusted temperature and humidity through the particulate material, and

recirculating the flow of air that has passed through the particulate material.

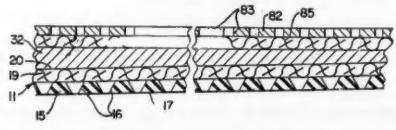
12. The apparatus of claim 11, wherein the means for removing particulate material from the top of the spiral tray comprises a linear vibrating conveyor.

3,879,858

METHOD AND APPARATUS FOR TREATING POROUS MATERIAL WITH FLUID

Robert R. Candor, 5940 Munger Rd., Miami Township, Ohio 45459, and James T. Candor, 5440 Cynthia Ln., Washington Township, Ohio 45429

Division of Ser. No. 167,206, July 29, 1971, Pat. No. 3,771,236, said Ser. No. 167,206, is a continuation-in-part of Ser. No. 105,894, Jan. 12, 1971, Pat. No. 3,699,663. This application Aug. 17, 1973, Ser. No. 389,260The portion of the term of this patent subsequent to Jan. 27, 1987, has been disclaimed.
Int. Cl. F26b *5/05*
U.S. Cl. 34—16 **24 Claims**



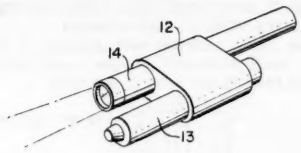
1. In a fluid through apparatus for treating porous material by fluid flowing substantially transversely through the material by a pressure differential being created across the material as the same passes through a pressure differential creating zone of said apparatus, the improvement comprising means for automatically causing a greater fluid flow rate through the lesser porous areas of a particular section of said material than the normal fluid flow rate therethrough normally caused by such areas being less porous than the more porous areas of said section of said material when said section of said material is in said zone and regardless of the relative locations of said lesser porous and more porous areas in said section.

3,879,859

METHOD OF VISUAL INSTRUCTION

Dolores J. English, Split Rock Rd., Syosset, N.Y. 11791

Filed Jan. 4, 1971, Ser. No. 103,479
Int. Cl. B43l *1/00*
U.S. Cl. 35—8 R **1 Claim**



1. The method of visual instruction of students having visual perceptual handicaps utilizing a substantially planar translucent screen having an observation surface and a reverse surface which comprises:

writing alphanumeric characters on the reverse surface of the screen with an erasable writing medium, each character being reversed from left to right and the order of the characters also being reversed from left to right;

and simultaneously projecting a beam of light on the reverse surface of the screen substantially in registry with and moving with the writing as the characters are formed,

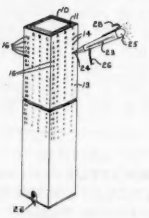
whereby a student sees the characters in proper form and order on the observation surface of the screen.

3,879,860

ELECTRONIC TEACHING AID

Richard L. Litle, P.O. Box 110 H, Odessa, Mo. 64076

Filed Oct. 4, 1973, Ser. No. 403,456
Int. Cl. G09b *7/06*
U.S. Cl. 35—9 C **4 Claims**



1. An apparatus for indicating answers corresponding to multiple choice or true and false questions, said apparatus including:

an outer member comprising a plurality of sides, each of said sides having a plurality of holes therethrough corresponding to possible answers to said questions, the holes in each side being arranged symmetrically in rows and columns;

an inner member having a plurality of faces corresponding to the number of sides in said outer member, each of said faces containing a plurality of passages extending thereinto and arranged in an irregular pattern, the number of passages being less than the number of holes, said inner member being removably supportable within said outer member with each of said passages aligned with one of

said holes, said inner member being rotatable and invertible with respect to said outer member to respectively align each of said passages with at least one hole in each of said sides; and

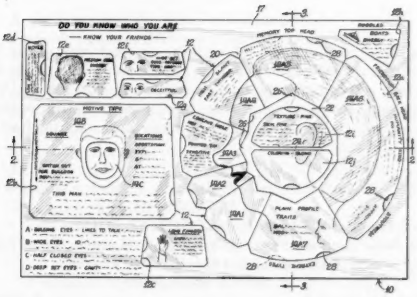
a probe insertible in said holes and operable to indicate which of said holes are aligned with a passage, whereby the correct answers to said questions may be ascertained.

3,879,861

CHARACTER ANALYSIS EDUCATIONAL GAME

Frederick W. Grantham, 600 S. Lairport St., Santa Monica, Calif. 90245

Filed Mar. 1, 1973, Ser. No. 336,979
Int. Cl. G09b 19/00
U.S. Cl. 35—21 5 Claims



1. An educational game comprising:

a board member having an angular and circumferentially continuous first recess conforming generally to a section of a circle with a center portion removed, the board member having a supporting bottom element extending across the bottom of the first recess;

the board member including a fixed outer element forming a radially inwardly facing, generally circular, outer wall and a fixed inner element forming a radially outwardly facing, polygonal, perimeter wall, the two walls with the bottom element defining said first recess;

said inner element including two supplementary recesses and corresponding supplementary pieces in a stack in each of the supplementary recesses, and the supplementary recesses having different shapes, whereby the supplementary pieces can be properly placed in only one of the supplementary recesses;

the outer perimeter wall having a plurality of inwardly directed projections selectively located to define distinct angular segments of the first recess;

the inner perimeter wall having a plurality of outwardly directed projections selectively located to define a radially directed axis of symmetry for each angular segment; and

a plurality of stacks of pieces insertable in the first recess and extending between the walls, each piece having distinct dimensions and being configured to mate with the respective projections of a corresponding angular segment and further having a radially directed axis of symmetry aligned with the axis of symmetry of its corresponding angular segment so as to permit placement of said piece either side up in said segment;

the pieces each having a representation of a portion of the human head thereon and altogether forming a circumferentially continuous series cooperating to form a continuous representation of the head;

the pieces including a plurality of surfaces depicting different forms of each feature of the head.

3,879,862

MINIATURE PLANETARIUM

Chang Kon Chin, 204 Avondale Dr., Augusta, Ga. 30907

Filed Aug. 23, 1973, Ser. No. 390,820
Int. Cl. G09b 27/02
U.S. Cl. 35—45 2 Claims

1. A miniature planetarium comprising:

1. a base supporting a transparent hollow sphere, on which are representations of the celestial bodies;

2. a center post affixed to said base and extending upwardly within the interior of said sphere;

3. A representation of the sun affixed to said center post;

4. a spherical segment element traversed by said center post and closely conforming to the bottom interior portion of said hollow sphere, said spherical segment element having a radially inwardly directed peripheral flange bearing calendar indicia;

5. a primary support arm mounted for rotation about said center post;

6. means for rotating said primary support arm about said center post;

7. a gear mounted on a radial extension of said support arm for rotation about a vertical axis;

8. a vertically upward shaft extension on said gear;

9. first gear train means for rotating said gear from said center post as said primary support arm rotates about said center post;

10. a wing plate secured to the top of said vertical shaft extension;

11. an earth replica mounted on said wing plate for rotation about a north-south axis of the earth extending upwardly from said wing plate and spaced from said wing plate rotational axis;

12. a double gear element journalled on said vertical shaft extension and having vertically spaced upper and lower gear members;

13. a second gear train means driven from said center post for rotating said double gear element by engagement with said lower gear portion;

14. a third gear train means driven by the upper gear of said double gear element for rotating said earth replica about its said north-south axis;

15. a moon support having a replica of the moon affixed to one end and the other end being affixed to said double gear element; and

16. a circular cover plate secured to said primary support arm and cooperating with the peripheral flange of said spherical segment element to cover the said elements (5), (6), (7), (8), and (9), and (13) and being apertured to surround the central portion of said double gear element.

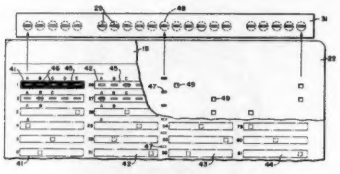
3,879,863
EXAMINATION PAPER SCORING ASSEMBLY

Michael P. Georges, P.O. Box 800, Norwood, Mass. 02062

Division of Ser. No. 47,264, June 18, 1970, Pat. No. 3,722,111. This application Dec. 20, 1972, Ser. No. 316,761The portion of the term of this patent subsequent to Mar. 26, 1990, has been disclaimed.

Int. Cl. G09b 5/00, 7/00

U.S. Cl. 35—48 B 1 Claim



1. For use in photo-transmissive electronic machine scoring of multiple-choice type examination papers, the combination comprising a light transmissive type test answer response sheet and an aperture device having:

a. a test answer response sheet having thereon in regular row and column array a plurality of rows of multiple-choice answer response blocks and at least one column of said multiple-choice answer response blocks, each said answer response block comprising of an opaque rectangle containing therein a plurality of spaced and aligned rectangular light transmissive areas which can be rendered opaque by a mark applied by a student; and

b. an aperture device to be used with the test answer response sheet during scoring comprised of an opaque surface with a pattern of rectangular light transmissive areas that are adapted to register and cooperate with correspondingly located said light transmissive areas of said test answer response sheet;

with each rectangular light transmissive area of said test answer response sheet and each rectangular light transmissive area of said aperture device being defined at their design center positions when used together in the scoring machine such that each rectangular light transmissive area of the said test answer response sheet having a width greater than the width of the correspondingly located rectangular light transmissive area of the said aperture device in one coordinate dimension by an amount of overlap on each side that is substantially equal to or greater than the expected maximum overall misalignment from the said design center position during actual use and a width less than the width of the correspondingly located rectangular light transmissive area of the said aperture device in the orthogonal coordinate dimension by an amount of overlap on each side that is substantially equal to or greater than the expected maximum overall misalignment from the said design center position during actual use to provide relatively large and constant area resultant apertures that are substantially without size or positional alignment errors due to manufacturing tolerance accumulation and assembly misalignment and permits closer adjacent aperture spacing by minimizing light energy interference to each photo-detector from adjacent aperture positions.

3,879,864
ANTI-SLIP ATTACHMENT FOR OVERSHOES

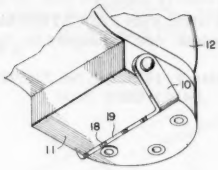
George A. Exley, Shelburne, Ontario, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Mar. 21, 1974, Ser. No. 453,272

Int. Cl. A43c 15/00

U.S. Cl. 36—61 1 Claim

1. An anti-skid bar rotatably attached to the sides of a heel of a shoe, comprising a metal bar formed with two end flanges bent perpendicularly to the axis of the bar and parallel to each other, said bar fitted on one edge with projecting teeth, said bar and flanges of a size to fit about the sides of the shoe heel, with the flanges of the bar rotatably attached to the opposed sides of the shoe heel so that in a first position, the bar may be rotated to rest against the exterior surface of the heel, and in a second position, the bar may be rotated to rest parallel to



the front side of the heel, with the toothed edge of the bar located on the edge of the bar opposite the edge of the bar which rests against the heel exterior surface in the said first position, and the bar of a size to rest in a recessed position with regard to the plane of the exterior surface of the heel, in the said second position.

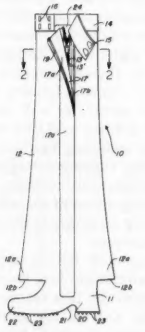
3,879,865
WEATHER PROTECTIVE BOOT

La Nelle Kimball, 5711 Gulfton, No. 1, Houston, Tex. 77036

Filed Mar. 22, 1974, Ser. No. 453,712

Int. Cl. A43b 1/10

U.S. Cl. 36—7.3 9 Claims



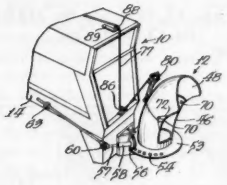
1. A weather protective boot comprising a foot portion and a leg portion, said leg portion being provided with an opening along one side thereof from near said foot portion to the top of said leg portion, said opening being provided with means for closing said opening after said boot is properly positioned on the wearer's foot, the interior of said leg portion being provided with a tongue member overlapping said means for closing said opening, the exterior of said leg portion being provided with seal means overlapping said means for closing said opening to the elements; said seal means including an overlapping flap attached along one side of said opening to said leg portion, the opposite side thereof being provided with a lip means sealingly engageable with corresponding receiving means along the opposite side of said opening.

3,879,866

MECHANISM FOR ADJUSTING DEFLECTOR FOR DISCHARGE CHUTE OF SNOW REMOVAL MACHINE

Ralph R. Gunderson, 8212 S. Homan, Chicago, Ill. 60652

Filed Mar. 5, 1973, Ser. No. 337,918
Int. Cl. E01h 5/00
U.S. Cl. 37—43 R 22 Claims



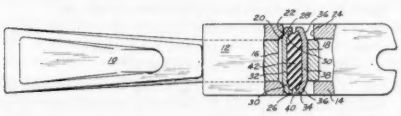
1. A snow removal machine, comprising,
a. a wheeled chassis having a control station,
b. a snow removal frame on the front of the chassis including a snow gathering housing,
c. snow removal blades rotatable in the housing,
d. an upwardly directed snow discharge chute rotatable on the housing about an upright axis,
e. a curved deflector pivotally mounted on the upper end of the chute and yieldably biased in one direction, and
f. means for pivotally adjusting the deflector from the control station, including
f-1. an upright rod having one end secured to the chute to afford a mounting bracket,
f-2. a pulley block mounted on the bracket for pivotal movement about the axis of rotation of the chute,
f-3. a pulley mounted on the block,
f-4. cable guide means on the chassis,
f-5. a cable secured to the deflector and passing from the deflector about the pulley and through the cable guide means on the chassis, and
f-6. having an end accessible for adjustment adjacent the control station for moving the deflector to adjusted positions.

3,879,867

FASTENING MEANS FOR RETAINING A DIGGER TOOTH IN A SOCKET

John Einar Ericson, Karlskoga, and Thrue Roland Anderson, Orebro, both of, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Continuation of Ser. No. 254,485, May 18, 1972, abandoned, which is a continuation of Ser. No. 879,770, Nov. 25, 1969, abandoned. This application Nov. 1, 1973, Ser. No. 411,788
Claims priority, application Sweden, Dec. 4, 1968, 16588/68
Int. Cl. F16b 19/02
U.S. Cl. 37—142 A 6 Claims



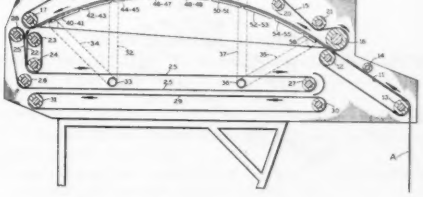
1. Device for releasably retaining a digger tooth having an elongate tapering root section in a socket member formed with a corresponding inwardly tapered opening for receiving the root section in a predetermined end position within the socket member, said root section having an opening extending transversely of its longitudinal direction and the socket member having in its wall corresponding transverse openings through which root section and socket member openings a locking pin is insertable transversely to the longitudinal direction of the root section, said locking pin comprising two spaced apart rigid lateral members having plane outer surfaces disposed in parallel relationship and an elongate resilient connecting element interposed between said two lateral members bonded thereto, said resilient element permitting limited parallel movement of said members toward and away from each other, said openings in the root section and in the socket member of the digger tooth respectively being of rectangular cross-sectional outline and positioned so that when the root section is in said predetermined end position the transverse side walls defining the root section opening are displaced longitudinally relative to the transverse side walls defining the socket member openings, so that one transverse side wall of the root section opening is located intermediate the transverse side walls of the socket member openings and the other transverse side wall of the root section opening is outside the peripheral outlines of the socket member openings, said locking pin being of rectangular cross-sectional outline and having a cross-sectional width such that the plane outer surfaces of the lateral members engage the transverse walls defining the socket member openings and the root member opening with pressure engagement in the relaxed state of the resilient connecting element thereby releasably retaining the locking pin in said openings with a pressure fit, said lateral members of the locking pin having at both ends a pair of coplanar protrusions extending toward each other substantially in the longitudinal direction of the root section and in planar alignment with each other, the lengths of said protrusions being such that there is a gap between the facing ends of said protrusions when the resilient connection element is in a relaxed state, said gap permitting parallel limited movements of the lateral members toward each other thereby causing a corresponding reduction of the cross-sectional width of the locking pin in response to a driving force applied to either pair in the direction of the length of the lateral members for insertion and removal respectively of the locking pin as a unit from either side of the socket member.

3,879,868

LAUNDRY DRYING APPARATUS

Roland W. Gerstenberger, and Arthur E. Lindstrand, both of Fort Lauderdale, Fla., assignors to Jensen Corporation, Fort Lauderdale, Fla.

Continuation-in-part of Ser. No. 390,580, Aug. 22, 1973, abandoned. This application July 3, 1974, Ser. No. 485,366
Int. Cl. D06f 69/02
U.S. Cl. 38—11 5 Claims



1. In a laundry drying apparatus having a platen with a curved, convex, broad area top surface, and means for moving a laundry article across the top surface of said platen from an entrance end thereof to an opposite exit end, the improvement which comprises:
means for circulating heated fluid across said platen from said exit end to said entrance end in heat transfer relationship to its top surface to remove moisture from the laundry article moving across it,

said platen having passage means therein for said heated fluid extending substantially completely across the platen directly below the top surface of the platen,

said means for moving the laundry article across the platen comprising an endless flexible belt conveyor closely overlying the top surface of the platen from said entrance end to said exit end,

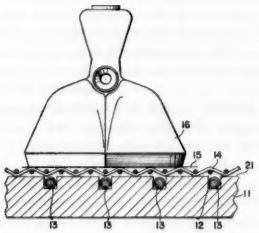
and said top surface of the platen being convex in the direction along which the laundry article is moved across it.

3,879,869

MAGNETIC IRONING BOARD

Glenn E. Bain, Commerco City, Colo., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Jan. 7, 1974, Ser. No. 431,411
Int. Cl. D06f *81/00*
U.S. Cl. 38—103 1 Claim



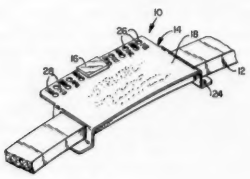
1. An ironing board, with a flat ironing surface, fitted with magnetic means for attracting a hand-held pressing iron to the surface of the ironing board and thus creating pressure while ironing between a pressing iron and work to be ironed lying on the ironing surface of the ironing board, with said magnetic means electrically energized and mounted in parallel slots below the ironing surface of the ironing board, said magnetic means when energized acting to create a magnetic field.

3,879,870

TAG ASSEMBLY FOR ANIMAL COLLAR OR THE LIKE

George M. Bachand, 80 Roseanna Rd., Southington, Conn. 06479

Filed June 28, 1973, Ser. No. 374,685
Int. Cl. G09f *3/14*
U.S. Cl. 40—21 C 16 Claims



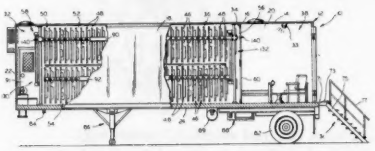
1. A tag assembly for an animal insecticide collar having a limited potency period and comprising an information tag, characters indicating names of the months of 1 full year and only a portion of another full year arranged in chronological series on said information tag, means for attaching said information tag to an insecticide collar, a character marker, and means for securing said character marker to said information tag in a preselected one of a plurality of fixed positions, said character marker in each of said positions cooperating with a plurality of consecutive said characters to indicate a period of time substantially equal to the potency period of the collar.

3,879,871

MOBILE STORAGE AND DISPLAYING ARRANGEMENT FOR PICTORIAL ART

Joseph E. McWilliams, 1345 Canterbury Ln., Glenview, Ill. 60025

Filed Apr. 11, 1973, Ser. No. 350,037
Int. Cl. B42f *17/00*
U.S. Cl. 40—78.07 1 Claim



1. A vehicle for storing and displaying framed pictorial art for itinerant vending of same utilizing the vehicle, with the vehicle including an enclosed wheeled body having front and rear ends and sides extending between the body ends, door means adjacent the vehicle rear end for providing customer access into the vehicle body when the vehicle is parked for vending of the art, and means for moving the vehicle between vending sites, said vehicle body further including:

a partition mounted therein intermediate the body ends and extending transversely of said body for subdividing the interior of said body into a forward body space and a rearward body space that are respectively forwardly and rearwardly of said partition,

said body forward space having positioned in same a plurality of upright panels extending transversely of the vehicle each including means for removably securing to the side of the same facing rearwardly of the vehicle framed pictorial art selections to be vended,

endless circuit means mounted in said body forward space for mounting said panels to move longitudinally of said body in superposed upper and lower circuit runs extending longitudinally of said body and to consecutively move vertically between said circuit runs, and for moving said panels consecutively along and between said runs and about said endless circuit means,

said partition being formed to define a viewing window opening aligned with the level of the upper run of said panels and proportioned to expose for viewing purposes from the rearward body space said side of the panels of said circuit runs, that is positioned rearwardmost of the upper run,

said rearward body space including means for accommodating persons to view through said window opening the pictorial art selections of said panel sides that are consecutively displayed through said window opening by movement of said panels about said circuit means,

with said door means being located to provide said customer access to said rearward body space,

said endless circuit means comprising:

a pair of upper trackways extending longitudinally of the vehicle and in opposed horizontally aligned relation along the respective sides of the vehicle body, and forming the circuit upper run,

a pair of lower trackways extending longitudinally of the vehicle and in opposed horizontally aligned relation along the respective sides of the vehicle body, and forming the circuit lower run,

said trackways each respectively defining opposed terminal ends,

said panels being of similar quadrilateral configuration defining side edges on either side thereof that are disposed adjacent the respective body sides,

said panels at their respective side edges each having a bracket member secured thereto and including means for supporting the panel between the trackways of the respective pairs of trackways to dispose said panels in said circuit runs,

and means for consecutively transferring said panels between said pairs of trackways at the ends of same including means for intermittently moving said panels longitudinally of said trackway pairs in a consecutive manner about said endless circuit means whereby the individual panels are consecutively disposed in said rearmost position relative to said window opening with time delay between movements for viewing of pictorial art selections secured to said side of same by persons accomodated in said rearward body space,

said means for releasably securing the art selections to said side of the individual panels comprising a plurality of securing devices mounted on the respective panels, for random position adjustment horizontally of the respective panels, and in vertically spaced relation along the height of said panels, and including means for releasably clamping the frames of art selections of diverse sizes to said side of the individual panels in accordance with the sizes of the art selections to be applied to the panel,

said window opening being proportioned and being free of obstruction for hand application and hand removal of the art selections to and from the individual panels from said rearward body space through said window opening relative to individual panels when at said rearmost position relative to said body,

said bracket members of adjacent panels being in separate discrete relation,

said bracket members each including a portion extending longitudinally of said trackways when said panels are disposed in said circuit runs and terminating at forward and rearward ends,

said bracket portions being received on the respective trackways of the respective trackway pairs when said panels are disposed in said circuit runs and forming said panel supporting means and each including a bumper at either end thereof for engagement with like bumpers of adjacent panel bracket members when disposed in the respective trackways,

said bracket members being secured to their respective panels to suspend same from the respective trackways in a substantially vertical upright position,

said transferring means comprising an elevator apparatus at the ends of the respective trackways and including:

means for receiving the bracket members of one of said panels disposed at the ends of the respective trackways, means for simultaneously and synchronoously vertically moving the respective elevator apparatus between the respective circuit runs for alignment with the trackways thereof,

and means for pushing the panel carried by the elevator apparatus at the forward ends of said circuit runs, when aligned with the circuit upper run, onto the trackways thereof to advance the panels of said upper run longitudinally thereof and rearwardly of the vehicle and dispose the rearward panel thereof in the elevator apparatus at the rearward ends of said runs at said rearwardmost position, and for pushing such rearwardmost panel, when said elevator apparatus is aligned with the circuit lower run, onto the circuit lower run trackways to dispose the forward panel thereof in the elevator apparatus at the forward ends of said runs for elevation of same to the circuit upper run,

said elevator apparatus at the respective ends of said runs each comprising:

a separate vertically movable trolley on each side of the vehicle,

said trolleys each carrying a horizontally disposed track element positioned for longitudinal alignment with the trackways serviced by the respective trolleys when said vertical moving means is operative to align the respective trolley track elements with their respective trackways,

said trolleys each carrying the respective pushing means thereof.

and means for releasably latching said panels of said runs from discharge from the circuit run trackway ends when said track elements are displaced from vertical alignment therewith.

3,879,872

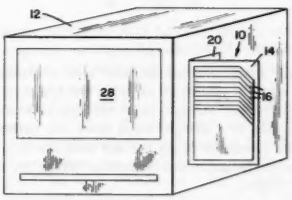
MICROFICHE HOLDER

Ronald Earl Plescia, San Jose, Calif., assignor to Quantor Corporation, Mountain View, Calif.

Filed Dec. 26, 1973, Ser. No. 427,759

Int. Cl. B42f *15/00*; **G09f** *7/00*

U.S. Cl. 40—104.03 **7 Claims**



1. A folder for carrying a plurality of fiches and mounting the several fiches adjacent a microfiche reader having a metallic portion for use, said holder comprising:

first and second substantially rigid planar members each having at least one lateral edge adjacent to a lateral edge of the other member, said members having inside and back faces and being hingeably attached along said adjacent lateral edges, said members being mutually rotatable about said attached edges so that the inside face of the first member is placeable in abutment with the inside face of the second member when said members are folded;

a plurality of overlying stacked pockets on the inside face of the first member and adapted to contain a plurality of fiches, said overlying stacked pockets being adapted to expose the top edge each of the fiches when the members are unfolded;

a magnet fixed to the inside face of the second member; and

means for releasably interconnecting the back faces of the first and second planar members when said members are unfolded approximately **270°** so that the magnet can be attached to the metallic portion of a microfiche reader and the fiches in the first member are held normal to said portion of the reader.

3,879,873

PICTURE FRAME ASSEMBLY

Robert J. Sawyer, 21585 Tuller Ct., Southfield, Mich. 48076

Filed June 28, 1973, Ser. No. 374,476

Int. Cl. G09f *1/12*

U.S. Cl. 40—156 **4 Claims**

1. A frame assembly for mounting a picture or the like, said frame assembly comprising:

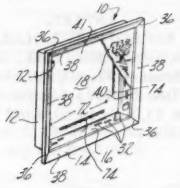
an open ended box shaped inner frame member formed in a single piece and an outer frame member,

means for locking said frame members together to mount said picture or the like therebetween,

means carried by said inner frame for supporting the inner side of said picture or the like, said last mentioned means being adjustably mounted to said inner frame to permit said frame assembly to accommodate pictures or the like of various thicknesses;

said supporting means comprising: a plurality of rectangular slots formed in the sides of said inner frame member and arranged in sets, each set being at a different distance

from the face of the inner frame adjacent to the outer frame member; a plurality of spring clips to be inserted from the outside into a selected set of said slots, said spring clips being formed from a resilient material having two straight flanged portions, two straight sides extending perpendicularly from the inner edge of the flange portions, a third straight side, perpendicular to the two



straight sides, and an inclined side extending from the third straight side to an edge at which it meets one of the first mentioned straight sides, the space between said first mentioned two straight sides when the spring clip is in a relaxed condition being greater than the length extension of said rectangular slots measured along the depth of said inner frame.

3,879,874

PICTURE MOUNTING AND DISPLAY SYSTEM

Spergan J. Broussard, Sr., Drawer C., Gallino, La. 70354

Filed May 29, 1973, Ser. No. 364,550
Int. Cl. G09f 1/10
U.S. Cl. 40—158 **5 Claims**

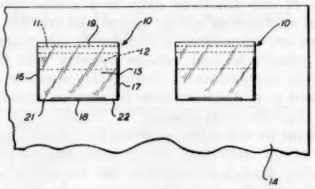
1. A picture mounting and display article comprising:
a backing board;
a picture mounted on the front of said backing board, the main subject matter on said picture being silhouetted through and around said backing board producing a peripheral side edge having a surface generally perpendicular to the main surfaces of said backing board;
reference feature grooves on the back side of said backing board outlining on said back side the main feature lines of the picture mounted on the front side of said backing board; and
means associated with said backing board for mounting said backing board with the picture mounted thereon for display purposes at least substantially all of the back of said backing board being visible when mounted and displayed; whereby the article displays the picture with a particularly attractive and life-like appearance.

3,879,875

STAMP MOUNT ENVELOPE

Henry G. Schneider, 81 Passaic Valley Rd., Montville, N.J. 07045

Filed May 2, 1974, Ser. No. 466,291
Int. Cl. G09f 1/10
U.S. Cl. 40—159 **6 Claims**



6. An envelope for mounting a stamp in a collector's book comprising a background plastic strip having top, side and bottom edges, a cover plastic strip overlying said background strip and extending beyond the top edge thereof to form a flap along an open end of the envelope, and heat-sealing lines impressed into said strip to close the envelope along the side and bottom edges thereof wherein said heat-sealing along said bottom edge of the envelope is terminated short of reaching the bottom corners of the envelope whereby to leave vent openings in said bottom edge opposite said open end of the envelope providing space to safeguard the corner serrations of the stamp and providing air venting through the envelope to preserve the stamps from drying out and to permit air escape at the bottom, equalizing substantially the escape at the open end of the envelope when the envelope is suddenly compressed.

3,879,876

BOWLING BALL INDICIA DISPLAY MEANS AND METHOD OF ASSEMBLYING SAME

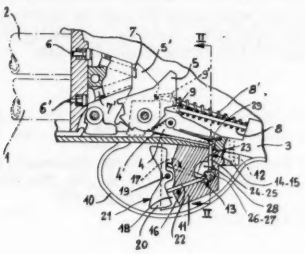
Donald F. Morgan, Bloomingdale, N.J., assignor to Amerace Esna Corporation, New York, N.Y.

Division of Ser. No. 149,494, June 3, 1971, Pat. No. 3,811,211.
This application Nov. 29, 1973, Ser. No. 420,212
Int. Cl. B44f 7/00
U.S. Cl. 40—327 **40 Claims**

1. Indicia display means comprising,
an annular shaped display element, said display element having a convex upwardly facing surface and a downwardly extending annular skirt portion integral therewith, said annular skirt portion having a remotely disposed free end adapted for supporting said display element in axial spaced relation thereto, said display element having indicia cooperatively associated therewith whereby said indicia is visible when viewed by an observer located above said convex upwardly facing surface, and wherein said display element is disposed within a recess located in the exterior surface of a spherically shaped object, said annular skirt portion free end being in contact with the remote bottom surface of said recess for supporting said display

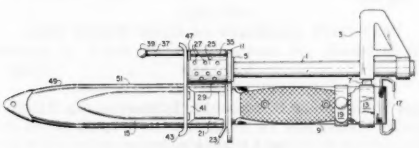
element in axial spaced relation above said bottom surface of said recess whereby said convex upwardly facing surface conforms to the curvature of said spherically shaped object and is flush-mounted with respect to said exterior surface.

3,879,877
DOUBLE-BARRELLED FIREARMS
Jean Cizeron, 2 rue de 11 Novembre, Saint-Etienne, France
Filed May 23, 1973, Ser. No. 363,262
Claims priority, application France, May 31, 1972, 72.20195
Int. Cl. F41c *19/00*
U.S. Cl. 42—42 R **9 Claims**



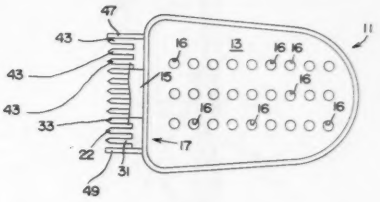
1. A double-barrelled firearm comprising:
a butt provided with a conventional firing mechanism having two sears disposed side by side;
a trigger guard located underneath said butt;
a metal block mounted beneath said butt, said metal block having two substantially horizontal ways opening into a transverse bore from which extend two vertical passages disposed one beside the other under said sears;
trigger means pivotally mounted opposite said horizontal ways and having arms disposed substantially vertically;
two rocking transmission members disposed in said bore and having in cross section the shape of a sector of a circle and having two inclined surfaces;
tappet means in the ways connecting the trigger arms to the transmission members; and
rod means in the passages connecting the transmission members to the sears.

3,879,878
BALLISTIC CUTTER
Daniel D. Musgrave, 8201 Cataway St., Cabin John, Md. 20731
Filed Apr. 22, 1974, Ser. No. 462,649
Int. Cl. F41c *27/00, 27/02*
U.S. Cl. 42—90 **9 Claims**



1. A ballistic cutter comprising: a scabbard adapted for mounting in a fixed position relative to a muzzle of a firearm; engagement means on said scabbard for positioning material to be cut in alinement with a bore of said firearm; and shield means on said scabbard positionally adapted for deflecting particles moving toward the rear of said firearm.

3,879,879
MINNOW SCOOPER AND HOLDER
Frank E. Bobo, 212 Algee St., Tiptonville, Tenn. 38079
Filed July 19, 1974, Ser. No. 489,996
Int. Cl. A01k *97/00*
U.S. Cl. 43—4 **12 Claims**

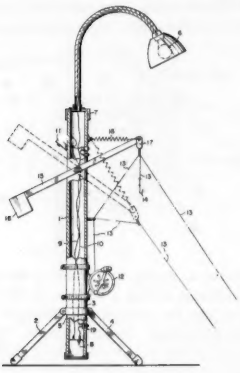


1. A minnow scooping and holding device comprising a sievelike receptacle having a handle fixedly attached thereto and an open top for scooping a minnow from a minnow bucket, said receptacle being provided with an elongated opening having a length at least as long as the minnow and a width at least as broad as the minnow whereby the minnow may freely pass lengthwise therethrough, a first holding element extending along one side of said opening and being fixedly attached to said receptacle with a portion thereof protruding outwardly away from said opening, a second holding element confrontingly arranged with said first holding element and extending along a side of said opening opposite to said one side thereof, the outer ends of said first and second holding elements normally converging along a line disposed a spaced distance from said receptacle, said first and second holding elements establishing in part a wedge shaped trough for receiving and aiding in restraining the minnow therein while facilitating attaching a fishhook thereto, means for swingably attaching said second holding element to said receptacle, and bias means for yieldably urging said second holding element toward said first holding element whereby said second holding element may selectively be manually yieldably urged away from said first holding element thus providing a passageway to subsequently permit passage therethrough of the minnow outwardly through the bottom of said trough.

3,879,880
FISHING DEVICE
Ralph I. Bailey, Newell, W. Va., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Nov. 29, 1973, Ser. No. 419,913
Int. Cl. A01k *97/12*
U.S. Cl. 43—17 **2 Claims**

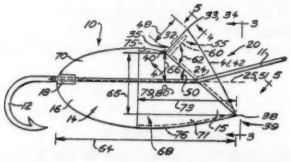
1. A fishing device, comprising
a support tube;
base means mounted on one end of the tube for supporting the tube substantially vertically;
a flexible neck extending from the other end of the tube;
a lamp mounted at the free end of the flexible neck;
energizing means in the tube for energizing the lamp comprising a source of electrical energy and a circuit comprising electrical conductors connecting the source of energy to the lamp;
a fish-controlled switch connected in an electrical conductor for opening and closing the circuit;
a fishing reel removably clamped to the support tube;
a fishing line wound on the reel;
a fish hook at the free end of the fishing line; and
switch actuating means mounted on the tube, coupled to the fish-controlled switch and supporting the fishing line in a manner whereby when a fish bites on the hook and pulls the line, the line closes the switch via the actuating means to energize the lamp, said switch actuating means com-

prising an arm pivotally mounted on the tube having a weight at one end and a fishing line supporting device at the other end and a spring coupling the other end of the



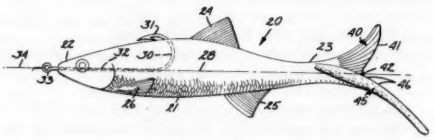
arm to the tube, the fish-controlled switch having contact means on the tube operated when abutted by the one end of the arm.

3,879,881
FISHING LURE
Glendon Ralph Vick, 1205 Colville Rd., Victoria, British Columbia, Canada
Filed Feb. 26, 1974, Ser. No. 445,874
Int. Cl. A01k *85/00, 97/04*
U.S. Cl. 43—41 **10 Claims**



1. A fishing lure for use with a fishing line having a hook at an outer end thereof, the lure having:
a. a body having forward and aft ends, the aft end having an aft line guide to accept the line,
b. a curved spoon secured to the forward end of the body portion, the spoon having a spoon central axis and a forward hole on the spoon axis to accept the line serving as a forward line guide, a straight axis passing through the forward and aft line guides defining central longitudinal axis of the lure; the spoon having a concave forward face having a perimeter defined in part by an upper edge extending between spaced corners at an upper and aft end of the spoon, and a nose on the spoon central axis at a lower and forward end of the spoon, a straight line extending between the corners of the spoon defining a chord of the spoon and having a length defining spoon chord length, spacing between the chord and the spoon central axis at the upper edge defining chord depth of the spoon; a portion of the spoon adjacent the central axis thereof being inclined at a rake angle to a horizontal plane containing the lure central longitudinal axis so as to slope rearwardly and upwardly from the nose,
c. a deflector having spaced upper and lower edges and spaced side edges provided adjacent the upper edge of the spoon, the deflector having a forward face inclined forwardly and upwardly at a deflector angle to the spoon forward face on the spoon central axis, spacing between the deflector upper and lower edges in a vertical plane containing the spoon central axis defining deflector depth, and spacing between the deflector side edges defining deflector width, the deflector width being less than the spoon chord length so as to define a pair of spaced clearance openings between the side edges of the deflector and the corners of the spoon,
so that a stream of water flowing past the lure from the forward to the aft end thereof is scooped up the forward face of the spoon and is deflected upwardly and laterally by the deflector forward face so that some water passes over the deflector and some water passes through the clearance openings at either side edge of the deflector, causing the lure to wobble relative to the lure central longitudinal axis.

3,879,882
FISH LURE
Oscar J. Rask, 2305 Lee Ave. North, Minneapolis, Minn. 55422
Filed Aug. 1, 1973, Ser. No. 384,595
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.28 **10 Claims**

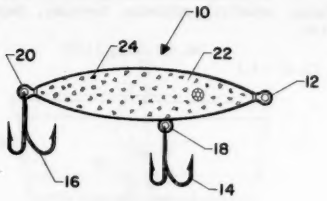


1. An improved fish lure, comprising:
a. a lure body, formed from a flexible material, longitudinally extending along a lure axis, said body terminating at a leading end and at a trailing end opposite said leading end;
b. a rudder member integrally connected to and longitudinally extending from the trailing end of the lure body, said rudder member lying in a plane extending through said lure axis; and
c. stabilizer means symmetrically disposed on opposite sides of said plane, transversely extending from said lure body proper near its said trailing end and longitudinally extending with and rearward of said rudder member and cooperating therewith for stabilizing oscillatory motion of said lure body about its said leading end while causing smooth life-like transverse oscillatory movement of its said trailing end.

3,879,883
GLITTER FISHING LURE
James W. Strader, P.O. Box 4029, Tallahassee, Fla. 32303
Filed June 18, 1973, Ser. No. 371,306
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.32 **1 Claim**

1. A fishing lure comprising:
a translucent plastic body;
a line receiving means connected to said body;
a hooked means connected to said body, and said body including a plurality of imbedded
reflective particles randomly distributed throughout said body, said body having a hill and dale surface providing

a generally irregular transparent surface for viewing said reflective particles,



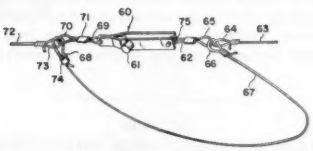
said reflective particles having a number of said reflective particles partially exposed on the surface of said body.

3,879,884

DROP-BACK CLIPS AND FISHING APPARATUS

Sherman R. Tucker, Sr., 578 Magnolia Ave., Melbourne, Fla. 32935

Filed Jan. 28, 1974, Ser. No. 437,402
Int. Cl. A01k *91/00*
U.S. Cl. 43—42.72 **12 Claims**



1. Fishing apparatus comprising a drop-back clip having a bowed left leaf, a bowed right leaf, a stem joining the upper portions of said leaves, a hole in said stem, a pair of domes, one adjacent the distal end of each of said leaves, a threaded hole in the bowed portion of said left leaf, a hole in the bowed portion of said right leaf, a tensioning screw, said screw having a threaded body and a head, said tensioning screw body passing through said hole in said right leaf and engaging the threads in said hole in said left leaf for adjusting tension between said domes, a first fishing implement means including a snap fastener having a lower eye and an upper eye, said lower eye being connected to said hole in said stem, said upper eye being adapted to slidably engage a downrigger line, and a second fishing implement means including a second snap fastener having a lower eye and an upper eye, said upper eye of said second snap fastener being releasably retained between said domes and said lower eye of said second snap fastener being connected to a fishing line.

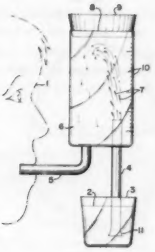
3,879,885

TOY STRAW WITH AN INTERNAL FOUNTAIN

Norman A. Fabricant, 307 Martense St., Brooklyn, N.Y. 11226

Filed Mar. 31, 1971, Ser. No. 129,846
Int. Cl. A63h *29/16*
U.S. Cl. 46—44 **11 Claims**

1. A toy, of the nature of a straw for drinking liquids, comprising a straw having an immersion section adapted to be placed in a drinking glass containing liquid, an oral section adapted to be placed in the mouth, and a chamber located between said immersion section and said oral section of said straw, said oral section of said straw terminating at the bottom wall of said chamber so that all the liquid which enters said chamber can flow out of the chamber through said oral section, suction at said oral section creating a fountain of liquid within said chamber, said chamber being formed at least in part of transparent material and said fountain projecting into



said transparent part so that said fountain of liquid is clearly visible from outside said chamber.

3,879,886

FISH HOOK WITH INTEGRAL BAIT CLIP

Mit Thomas, 609 N. Tyler, Dallas, Tex. 75208

Filed July 17, 1973, Ser. No. 360,529
Int. Cl. A01k *83/06*
U.S. Cl. 43—44.6 **5 Claims**

1. A fish lure comprising a fish hook including a barb, a bait holder for securing live bait to said fish hook independent of said barb, wherein said bait holder comprises:

a. a snap-on clamp including one end removably attached to said fish hook, and

b. said clamp including a pair of arms extending from said one end to a second end,

c. said second end removably engaging said fish hook,

d. said arms comprising at least one bait engaging portion intermediate said ends.

3,879,887

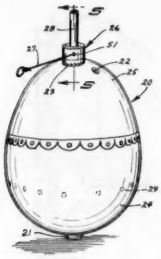
INFLATABLE TOP

Robert H. Brookson, Jr., and Richard G. Greig, both of Jackson, Wyo., assignors to Teton Toy Development Company, Jackson, Wyo.

Filed Nov. 15, 1973, Ser. No. 415,945
Int. Cl. A63h *1/02*
U.S. Cl. 46—67 **14 Claims**

1. An inflatable top comprising an inflatable bag having a central turning axis, said inflatable bag being made of material that is flexible but does not stretch substantially when under inflation, said bag being formed substantially into the size and shape when uninflated as is desired for the top when fully inflated, said bag having means for engaging a support surface

for rotational movement about its central axis when inflated, means mounted on said bag to permit inflation thereof, means



for rotating said inflated bag about said central axis to impart top like motion to said inflated bag.

3,879,888

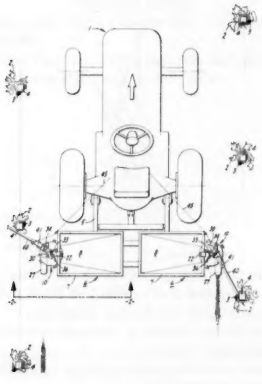
SOIL CONDITIONER DEPOSITING APPARATUS

Eugene D. Riley, 3807 Tully Rd., Hughson, Calif. 95326

Filed Dec. 21, 1973, Ser. No. 427,111

Int. Cl. A01c *15/12*

U.S. Cl. 47—1 **5 Claims**



1. An agricultural apparatus operative, upon advance along a vineyard row, to ground-deposit a quantity of dry, free-flowing soil conditioner adjacent each grapevine in the row, and to then discontinue such depositing until the next grapevine is reached; the apparatus comprising a bin for the soil conditioner, a discharge member, a normally inactive mechanism between the bin and discharge member operative, when actuated, to deliver a quantity of the soil conditioner, from the bin, to such discharge member, and means to automatically actuate said mechanism upon the apparatus passing each grapevine; said mechanism including a rotary feeder mounted in communication with the bin and having a rotor turnable to successive positions in each of which the feeder receives a quantity of soil conditioner from the bin and delivers a quantity of soil conditioner to the discharge member, and a rotary ratchet and pawl unit associated with the rotary feeder in actuating relation to the rotor; said means being arranged to actuate said ratchet and pawl unit to turn the rotor to one of such positions upon the apparatus passing each grapevine.

3,879,889

PLANTER

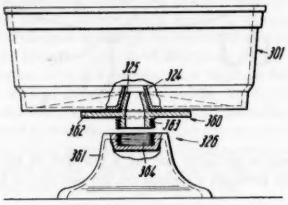
Willi Schmid, Spielberg 6, 74 Tubingen, Germany

Filed Sept. 4, 1973, Ser. No. 393,754

Claims priority, application Germany, Sept. 6, 1972, 2243762

Int. Cl. A01g *31/00*

U.S. Cl. 47—1.2 **25 Claims**



1. An upwardly open planter which includes in combination: a one-piece container having an upper section and a lower section and an intermediate partition adapted to be removably placed between said upper and lower sections and provided with venting openings and perforations, said container also comprising a bottom with tubular means extending from said bottom in upward direction and being open at its lower end, a clear sight window arranged within the region of said lower section in at least one wall and being provided with a filling opening located substantially above said partition, and support means having an upwardly extending projection fitting into said tubular means and adapted to support said container.

3,879,890

ALGAL POLYSACCHARIDE PRODUCTION

Lawrence C. M. Chen, Spryfield, Nova Scotia; James S. Craigie, Halifax, Nova Scotia; Esther L. McCandless, Dundas, Ontario; Jack L. McLachlan, Halifax, Nova Scotia, all of Canada; Arthur C. Neish, deceased, late of Granville Ferry, Nova Scotia, Canada (by Dorothy A. Neish, executrix); Peter F. Shacklock, Sambro, and John A. Walter, Halifax, Nova Scotia, both of Canada, assignors to Canadian Patents and Development Limited, Ontario, Canada

Filed Feb. 6, 1974, Ser. No. 440,247

Int. Cl. A01g *7/00*

U.S. Cl. 47—1.4 **12 Claims**

1. A method for the production of specific polysaccharide from selected algal species producing the desired polysaccharide, comprising:

a. providing vegetative parts or spores separated into
   i. gametophytes, or
   ii. tetrasporophytes,
b. vegetatively propagating the segregated plant material,
c. harvesting the plant growth, and
d. recovering the desired polysaccharides from the harvested plants.

3,879,891

WINDOW PLANTER

John B. Jones, III, 48 Delle Ave., Roxbury, Mass. 02120

Filed July 27, 1973, Ser. No. 383,222

Int. Cl. A01g *9/02*; **B65d** *25/54*

U.S. Cl. 47—36 **6 Claims**

1. A window planter for use with a window structure having a frame, said window planter comprising:

a. a convex central portion defining a cavity, at least a portion of said convex central portion being light-transmitting,
b. a flange surrounding said convex central portion, said flange being in a single plane so that its edge may be supported in the window frame, and said flange joining

said convex central portion along the periphery of the latter, and

c. wall means having a height less than one-half the height of said convex central portion and joined to the lower

region of said convex central portion to define a receptacle for soil in which plants can be planted, said wall means extending above the lowermost point of the periphery of said convex central portion.

3,879,892

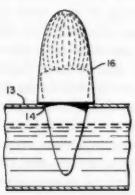
METHOD FOR FORCING WITLOOF

Joseph A. Di Giacinto, 535 Ocean Blvd., Coronado, Calif. 92118

Filed Nov. 16, 1973, Ser. No. 416,352

Int. Cl. A01g *31/00*

U.S. Cl. 47—58 **8 Claims**



1. A method of forcing witloof from an endive root comprising the steps of providing a root of an endive plant, placing the tip end of said root in an aqueous medium, placing the open end of a cavity having a generally conical interior surface with a rounded apex over the reticle end of said root while the root tip is maintained in said aqueous medium, whereby said witloof will develop into said cavity upon being forced from said root and will thereby be shaped into a desired compact form, maintaining said root tip submerged in said aqueous medium and said reticle end of said root out of contact with said aqueous medium until such time as said witloof is forced from said root, excluding light from the witloof while it is being forced from said root whereby said witloof is blanched, and thereafter separating said witloof from said endive root.

3,879,893

SUPPORTING ROLLER ASSEMBLY FOR A SLIDING PANEL

B. J. Helmick, 303 Deborah Ct., Upland, Calif. 91786

Filed Jan. 16, 1973, Ser. No. 324,235

Int. Cl. E05d *13/02*

U.S. Cl. 49—420 **18 Claims**

1. A supporting roller assembly for a sliding panel movable along a track and having an edge channel opening toward said track comprising:

a mounting bracket having side faces and adapted to be removably positioned in said channel with the side faces of the bracket facing the channel side walls,

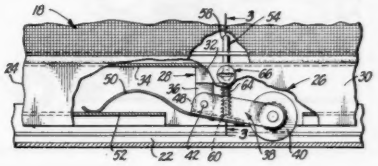
an arm,

means pivotally mounting said arm on said bracket on a pivot axis substantially normal to said side faces of the bracket,

a track engaging roller mounted on said arm with the roller axis generally parallel to and displaced from said pivot axis,

a spring for urging said arm in one direction about said pivot axis to bias said roller toward said track, and

an adjustable stop on said bracket engageable with said arm for adjustably limiting movement of said arm in the opposite direction about said pivot axis, said stop comprising



a plunger slidable in said bracket toward and away from said arm with the plunger axis generally parallel to said bracket faces, a spring for urging said plunger toward said arm, and a lock screw threaded in said bracket on an axis substantially normal to said bracket faces and engageable with said plunger for releasibly securing said plunger in a fixed position relative to said bracket, said lock screw projecting beyond one side of said bracket for extension through a hole in one of said panel channel side walls, whereby said lock screw is accessible externally of said panel for releasing and locking said plunger.

3,879,894

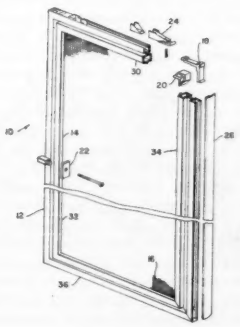
SLIDING SCREEN DOOR

Richard N. Anderson, Owensboro, Ky., assignor to V. E. Anderson Mfg. Co., Owensboro, Ky.

Filed Feb. 5, 1973, Ser. No. 329,676

Int. Cl. E05d *13/02*

U.S. Cl. 49—420 **15 Claims**



1. Sliding screen door structure which is completely symmetrical and therefore reversible end for end, inside for outside and left to right comprising head, jamb and sill frame extrusions secured together at their ends into a rectangular frame each of which have an identical cross section comprising an inner and outer hollow rectangular portion separated by a solid web portion which cross section is substantially symmetrical about a center line parallel to the plane of the frame, a screen member, and means for securing the periphery of the screen member to the frame on the center line of the extrusion cross sections parallel to the plane of the frame.

3,879,895

CLOSURE MEMBER AND PROTECTOR

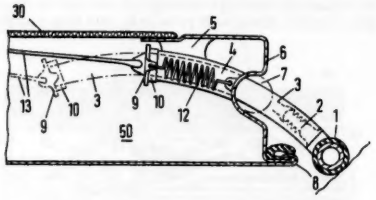
Mitja Victor Hinderks, 15a Adamson Rd., London, England

Filed Mar. 30, 1973, Ser. No. 346,299

Claims priority, application United Kingdom, Mar. 30, 1972, 15001/72

Int. Cl. B60j *5/00*

U.S. Cl. 49—462 **13 Claims**



1. A container having a door assembly, said door assembly comprising two spaced panels interconnected by a peripheral flange, the door assembly being movable from a first closed position to a second open position, at least one protective member positioned exteriorly against said peripheral flange when the door assembly is in said first position, support means for supporting said protective member, said support means being slidably mounted by guide means defining a guide member, and actuating means for moving said protective member from an inoperative retracted position against said peripheral flange when the door assembly is in said first position to an operative protective position when the door assembly is in said second position.

3,879,896

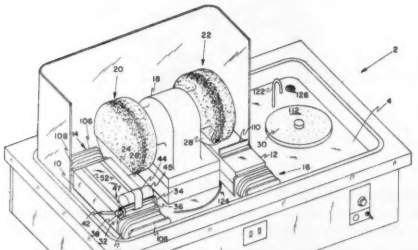
ROCK CUTTING AND POLISHING DEVICE

E. Blair Maxfield, 456 S. 300 West, and Lawrence C. Cooper, 365 S. 300 West, both of Cedar City, Utah 84720

Division of Ser. No. 194,218, Nov. 1, 1971, abandoned. This application May 10, 1973, Ser. No. 359,168

Int. Cl. B24b *7/22*

U.S. Cl. 51—3 **7 Claims**



1. An apparatus for preparing rock specimens for microscopic study comprising:

support structure;

a first rock cutting site at the top of the support structure comprising:

first rock cutting means having as least one blade, spanning a vertical distance between first and second elevations, for cutting a planar surface in a sample rock;

first carriage means mounted for linear reciprocable movement along first track means horizontally adjacent the first rock cutting means, the first track means being juxtaposed and essentially parallel to the cutting blade, the first carriage means defining a rock receiving site at an intermediate elevation between the first and second elevations;

first specimen securing means, carried by the carriage means at the rock receiving site, for anchoring a sample rock in a secure position at the rock receiving site at said intermediate elevation with the rock sample being markedly cantilevered out from the first carriage means into cutting alignment with the blade whereby displacement of the carriage means along the track means will cause the blade to cut a planar surface in the cantilevered portion of the sample rock and ultimately a relatively thin specimen is obtained;

a second rock cutting site at the top of the support structure comprising:

second rock cutting means having at least one blade spanning a vertical distance between spaced elevations for cutting planar surfaces in a rock specimen;

second carriage means mounted upon and linearly reciprocable along second track means horizontally adjacent the second rock cutting means, the second track means being juxtaposed and essentially parallel to the cutting blade of the second rock cutting means the second carriage means defining a second rock receiving site located at an elevation between the spaced elevations;

second specimen securing means, carried by the carriage means at the second rock receiving site, for holding a rock specimen in a stable position at the second rock receiving site at said between elevation accommodating cantilevering of the rock specimen out from the second carriage means into cutting alignment with the blade of the second rock cutting means whereby displacement of the second carriage means along the second track means will cause the last-mentioned blade to cut a planar surface in the cantilevered portion of the rock specimen and ultimately a trimmed specimen for miscroscopic examination is obtained;

at least one lap table at the top of the support structure disposed in sink structure comprising a vertical shaft and a grinding disc non-rotatably secured to the shaft for rotation in a generally horizontal plane within the sink structure whereby polishing of cut surfaces of a rock specimen is accomplished; and

power means for rotating said blades and disc upon command.

3,879,897

METHOD AND APPARATUS FOR PRODUCING THE BEARING RACES

Hirosi Kato, Ichikawa, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1972, Ser. No. 313,477

Int. Cl. B24b *5/12*

U.S. Cl. 51—5 D **17 Claims**

1. A method for producing bearing races, the method comprising:

providing an elongated pipe formed of bearing steel;

grinding the inner and outer surfaces of an end portion of the pipe to the shapes of the inner and outer surfaces, respectively, of a bearing race; and then

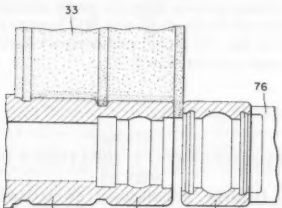
severing said end portion from the pipe to produce a bearing race therefrom, said grinding comprising finish and rough grinding the outer surfaces of said end portion and an adjacent portion, respectively, of said pipe by finish and rough grinding parts, respectively, of an outer surface grinding wheel, and finish and rough grinding the inner surfaces of said end portion and said adjacent portion, respectively, of said pipe by finish and rough grinding parts, respectively, of an inner surface grinding wheel.

11. Apparatus for producing bearing races from an elongated pipe of bearing steel, the apparatus comprising:

a pipe spindle for supporting the pipe for rotation about its longitudinal axis;

inner and outer surface grinding wheels for grinding the inner and outer surfaces, respectively, of an end portion of the pipe to the shapes of the inner and outer surfaces, respectively, of a bearing race; and

cutting means provided by one of the grinding wheels for severing the end portion from the pipe to produce a bearing race therefrom, wherein the inner and outer surface grinding wheels are supported for rotation about axes substantially parallel to the longitudinal axis of the pipe by inner and outer surface grinding wheel spindles, respectively, the inner surface grinding wheel spindle being movable along an axis substantially parallel to said



longitudinal axis for enabling the inner surface grinding wheel to enter the end portion of said pipe and also being movable in a direction substantially perpendicular to said longitudinal axis for permitting the inner surface grinding wheel to be fed to the inner surface of said end portion, and the outer surface grinding wheel spindle being movable in a direction substantially perpendicular to said longitudinal axis for enabling the outer surface grinding wheel to be fed to the outer surface of said end portion, and wherein the inner surface grinding wheel spindle has a cover which faces the inner surface grinding wheel, and wherein the cover has an annular passage therein, means for carrying grinding fluid to the passage, and a plurality of ports through which grinding fluid in said annular passage can be injected onto the inner surface of the end portion of the pipe during inner surface grinding.

3,879,898

GEAR GRINDER WITH DIGITAL CONTROL

John Loxham, Bletchley, and Jack Dinsdale, Cranfield, both of England, assignors to Cranfield Institute of Technology, Cranfield, England

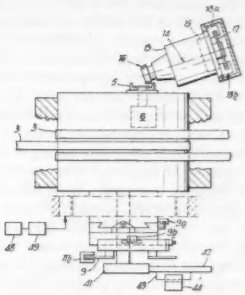
Filed Feb. 27, 1973, Ser. No. 336,354

Claims priority, application United Kingdom, Mar. 3, 1972, 10171/72

Int. Cl. B24b *19/00*

U.S. Cl. 51—33 W **19 Claims**

1. A machine tool comprising a workpiece support which can be displaced about a first axis, a tool support which can be oscillated about a second axis and which is constructed to support an annular tool for rotation about a third axis spaced from the second axis so that a supported tool will not only rotate about its own axis but will also oscillate on an arcuate path about the second axis, and a control system comprising: two signal generating means for coupling to respective ones of said workpiece support and said tool support of the machine to produce signals indicative of the angular movements of the respective supports; a comparator for comparing the signals and issuing an error signal if the comparision indicates that said signals do not have a predetermined correspondence; and processing means interposed between the comparator and at least one of said generating means to modify the signal of the at least one generating means so that said signals will have said



correspondence at said comparator when said supports are moving a desired relative manner.

3,879,899

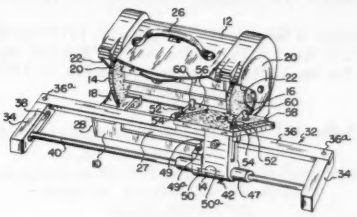
SCISSORS SHARPENER

William J. Ribar, 4505 W. 158th St., Cleveland, Ohio 44135

Filed Mar. 28, 1973, Ser. No. 345,561

Int. Cl. B24b *3/52, 3/58*

U.S. Cl. 51—92 BS **11 Claims**



1. In a portable sicssors sharpener a frame, a pair of laterally spaced grinding wheels mounted on said frame for rotation about generally horizontal axes, one of said grinding wheels being adapted to sharpen conventional scissors and the other of said grinding wheels being adapted to sharpen pinking shears, a rod extending in the same general direction as said axes of said grinding wheels, means on said frame connecting each end of said rod to said frame by a floating connection having rod guide surfaces lying in a plane substantially parallel to said axes, so that each end of said rod is capable of movement to a different or to the same extent as the other end in said plane toward and away from said grinding wheels, a movable carriage slidably engaging said rod, said carriage comprising a base portion and means on said base portion for clamping a scissors blade to said carriage, said carriage being movable toward and away from selected of said grinding wheels and being movable longitudinally along said rod for moving the scissors blade into grinding contact with the selected one of said grinding wheels, said connections between each end of said rod and said frame being disposed laterally outwardly a predetermined distance from the corresponding grinding wheel whereby said carriage can move longitudinally of said rod a sufficient amount to carry a scissors blade into grinding contact with the selected grinding wheel for substantially the full extent of the cutting edge of the blade, said clamping means on said carriage comprising a pair of laterally spaced clamping jaw portions mounted on said base portion, means disposed between each jaw portion and said base portion for resiliently opposing free movement of the jaw portion toward the base portion, said resilient means comprising a conical compression spring, and fastener means coacting

between said base portion and the respective jaw portion for adjustably forcing each of the jaw portions toward said base portion and against a scissors blade, to releasably clamp the blade between the respective jaw portion and said base portion, said spring encircling the respective fastener means and being telescopically compressible to substantially a single coil thickness upon predetermined actuation of said fastener means to force said respective jaw portion toward said base portion, shallow recess means in said base portion receiving the wider end of said spring for locating the latter relative to said base portion, said recess means being of a depth just sufficient to substantially receive said spring in the completely compressed condition of the latter, pin means on said base portion spaced laterally outwardly from the respective fastener means, aperture means in each of said jaw portions through which the respective of said pin means generally loosely projects for orienting in conjunction with the respective fastener means the respective jaw portion with respect to said base portion and restraining rotational movement of each of said jaw portions relative to said base portion in the non-clamping condition of said jaw portions, at least one of said portions having roughened clamping surfaces for providing increased frictional resistance to movement of a scissors blade in the clamping condition of said jaw portions.

3,879,900

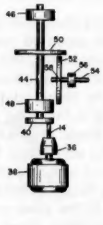
APPARATUS FOR PROFILING BONDING NEEDLES

Harry Da Costa, Scottsdale, and Charles G. Thornton, Phoenix, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Division of Ser. No. 156,523, June 29, 1971, Pat. No. 3,768,211, which is a division of Ser. No. 859,133, Sept. 18, 1969, Pat. No. 3,631,645. This application Feb. 21, 1973, Ser. No. 334,332

Int. Cl. B24b *19/16*

U.S. Cl. 51—161 **3 Claims**



1. An apparatus for simultaneously polishing the inner and outer surface profiles of a tip of a hollow bonding tool having a body axially of the tip comprising:

means for holding and rotating the bonding tool about a first axis;

polishing means having an axis of rotation spaced from and parallel to said first axis and including a grained pad impregnated with a polish material with said grains of said pad oriented parallel to said first axis for simultaneously polishing the inner and outer surface profiles of the bonding tool;

means for intermittently and alternately rotating said polishing means including said pad along and about its axis; and means for embedding the tip of the bonding tool into said grained pad of said polishing means.

3,879,901

METAL-COATED DIAMONDS IN A METAL ALLOY MATRIX

Robert John Caveney, Johannesburg, South Africa, assignor to De Beers Industrial Diamond Division Limited, Johannesburg, South Africa

Continuation of Ser. No. 153,105, June 14, 1971, abandoned. This application Sept. 10, 1973, Ser. No. 395,457

Claims priority, application South Africa, June 24, 1970, 70/4347

Int. Cl. B24d *3/06*

U.S. Cl. 51—295 **5 Claims**

1. A compact consisting essentially of substantially graphite-free diamond particles having a continuous metal coating of thickness from 1,000 to 2,000A chemically bonded thereto and held in a matrix by a diffusion alloy of the metal and the matrix at the metal/matrix interface, the metal being selected from the group consisting of titanium and molybdenum and the matrix being selected from the group consisting of Fe/Ni, Ni/Co/Cr/Fe and Fe/Si alloys and WC bonded with a transition metal of the VIII group, said compact having a grinding efficiency ratio greater than 1.

3,879,902

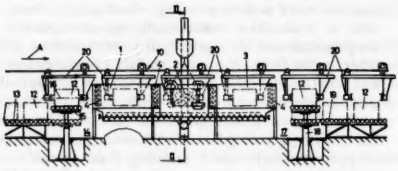
METHOD FOR SURFACE TREATMENT OF WORK PIECES

Hans Paul Haberlin, Schaffhausen, Switzerland, assignor to Wheelabrator-Frye, Inc., New York, N.Y.

Division of Ser. No. 255,778, May 22, 1972, Pat. No. 3,813,817. This application Mar. 7, 1974, Ser. No. 449,046

Int. Cl. B24c *1/00*

U.S. Cl. 51—319 **3 Claims**



1. A method for the surface treatment of blanks while being carried by a mobile suspension means from a loading station through a blast chamber and blast medium removal chamber to an unloading station, comprising the steps of:

raising the blanks at the loading station to a height wherein the center of the blanks correspond approximately to a horizontal axis of rotation of the clamping means on the mobile suspension means,

clamping the raised blanks between clamping means,

carrying the blanks in said clamping means from the loading station through the blast chamber and the blast medium removal chamber to the unloading station,

rotating the blanks about said horizontal axis while being conveyed through the blast chamber and the blast medium removal chamber,

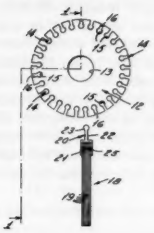
blasting the blanks with blasting medium thrown centrifugally by blasting wheels during passage through the blast chamber,

releasing the blanks and lowering the released blanks at the unloading station.

3,879,903
WHEEL OR DRUM CONSTRUCTION AND PACKS THEREFOR

James A. Belanger, Livonia, Mich., assignor to Belanger, Inc., Northville, Mich.

Filed Feb. 6, 1973, Ser. No. 330,629
Int. Cl. B24d *13/04*
U.S. Cl. 51—337 4 Claims



1. A workpiece finishing unit comprising fill material to be mounted in a position radially outwardly of the axis of a rotary driver structure, and a rigid unitary clip member for supporting and so mounting said fill material on such structure, said member being continuously and uninterruptedly coextensive in axial length with said fill material, and in a solid cross-section throughout in a plane at 90° to said axis as thus mounted, said clip member presenting a radially outer portion of generally U-shape having a laterally extending base and having a pair of outer, generally parallel and spaced apart forked arms between which said fill material is clamped extending outwardly from the side edges of said base, a radially inner, axially extending and transversely enlarged bead-like mounting portion of cylindrical configuration, and an intermediate solid neck portion integrally connecting said bead-like mounting portion and said radially outer portion being connected to the base of the latter midway between the side edges thereof, said neck portion being substantially narrower than said base so that said base projects laterally in opposite directions beyond the sides of said neck portion, said bead-like portion and said neck portion being shaped for a slidingly mating engagement with the driver structure, said outer, neck and bead-like portions being components of an extruded axially elongated length of stock.

3,879,904
LAPPING DEVICE

Martin Hafner, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Aug. 6, 1973, Ser. No. 386,199
Claims priority, application Germany, Aug. 8, 1972, 2239073
Int. Cl. B24d *17/00, 37/02*
U.S. Cl. 51—363 16 Claims

1. A method of producing a lapping face of large radius cylindrical curvature, comprising:

providing an elongated lapping plate of resilient material with a normally flat lapping face;

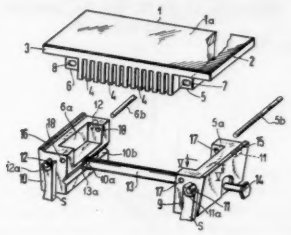
applying bending moment force across the plane of said face simultaneously to opposite end portions of said lapping plate within its elastic limits;

coincident with the application of said bending moment force controlling bending of the plate in the area of the plate between said end portions to cause said lapping face to assume a uniform cylindrical radius of curvature, comprising connecting a respective bending moment applying member to each opposite end portion of the plate and simultaneously actuating said members to thrust upwardly against said plate adjacent to the respective associated end of the plate and to pull down on the plate spaced inwardly from said upward thrust engagement; and

thrusting said members to swing outwardly in respective opposite directions about respective pivots located substantially midway between the points of connection of each of the members.

10. A method of producing a lapping face of large radius cylindrical curvature, comprising:

providing an elongated lapping plate of resilient material with a normally flat lapping face;



applying bending moment force simultaneously to opposite end portions of said lapping plate within its elastic limits; coincident with the application of said bending moment force controlling bending of the plate in the area of the plate between said end portions to cause said lapping face to assume a uniform cylindrical radius of curvature;

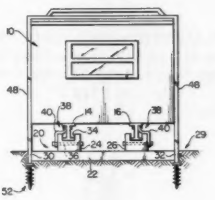
applying to said lapping face a lapping surface sheet;

and retaining said lapping surface sheet in conformity with said face by vacuum.

3,879,905
PRECAST FOUNDATION ASSEMBLY FOR MOBILE HOMES

Frank R. Catalano, Sr., P.O. Box 1507, West Palm Beach, Fla.

Filed Jan. 22, 1974, Ser. No. 435,510
Int. Cl. E02d *27/00*
U.S. Cl. 52—23 7 Claims



1. A precast foundation assembly for a mobile home having a frame, the combination comprising:

support means for supporting said mobile home on the ground,

said support means including a plurality of precast concrete support assemblies spaced along the bottom of said mobile home and supported on the ground,

each of said support assemblies comprising a slab base having a length substantially equal to the width of said mobile home, and two spaced apart support structures precast integrally with said slab base, each of said support structures having a receiving portion for engaging said frame of said mobile home,

each of said support structures comprising an upstanding block substantially in the form of a parallelepiped extending upwardly from the top surface of said slab base with the tops of each of said blocks being elevated from the top surface of said slab base,

each of said receiving portions being a reduced portion formed in the tops of each of said blocks, and

each of said blocks being centered along the longitudinal axis of said slab base and being spaced inwardly from the ends of said slab base.

3,879,906

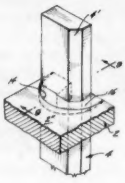
TWO-MEMBER STRUCTURAL JOINT

Dennis D. Hollenberg, 1935 37th Pl., East, Seattle, Wash. 98112

Filed July 22, 1974, Ser. No. 490,251

Int. Cl. F16b *9/02*

U.S. Cl. 52—753 R **10 Claims**



1. A structural joint comprising a pair of structural members, each of which has oppositely disposed faces thereon which coterminate with one another at the outline of the member and define an edge of the member therebetween, which edge has a slot therein, the walls of which are disposed crosswise to the faces of the member and extend inwardly of the faces from the edge to the bottom of the slot, said members being disposed in right angularly related planes and the body of one member being engaged in the slot of the other member and having that edge portion of the other member which is disposed adjacent one wall of the slot therein, received in the slot of the one member, and means connecting the edge portion of the other member with the one member at the slot therein, whereby the one member cannot be disengaged from the other member in the direction outwardly of the slot in the other member.

3,879,907

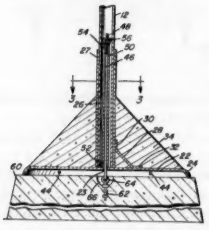
FLAG MOUNTING STRUCTURE

Harry M. Olson, 410 1st Ave., North, Clear Lake, Iowa 50428

Filed Nov. 8, 1973, Ser. No. 414,139

Int. Cl. E02d *27/00*

U.S. Cl. 52—297 **7 Claims**



1. Flag support means for supporting a flag on a flagstaff comprising:

a. a base plate adapted to rest on the ground having a centrally disposed opening therein;

b. a generally conically shaped anchor adapted to be embedded in the ground for securing said base plate thereto;

c. an elongated tubular member disposed over said opening extending upwardly from said base plate at substantially right angles thereto to receive the lower end of the flagstaff therein;

d. an elongated rod-like member extending through said tubular member and said openings, said rod-like member having engaging means at the end thereof below said base plate for attaching said plate to said anchor;

e. means for securing said rod-like member to said base plate, said means comprising external threads on the end of said rod-like member remote from said engaging means, a tubular sleeve within said tubular member surrounding said rod-like member and having one end supported on said base plate, the threaded end of said rod-like member projecting through said sleeve, and threadable fastening means on the threaded end of said rod-like member engaging the other end of said sleeve;

f. a conically shaped solid, cast support member on said base plate surrounding said tubular member, said tubular member projecting beyond the apex of said support member; and

g. a diagonal bracing member embedded within said support member secured to said tubular member and to said base plate.

3,879,908

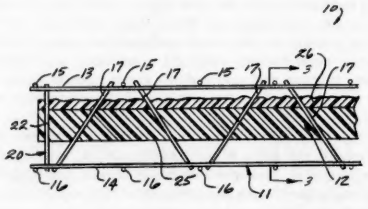
MODULAR BUILDING PANEL

Victor P. Weismann, 430 Prospect Cir., South Pasadena, Calif. 91030

Continuation of Ser. No. 202,879, Nov. 29, 1971, abandoned. This application May 31, 1973, Ser. No. 365,538

Int. Cl. E04c *2/26*

U.S. Cl. 52—309 **6 Claims**



1. A prefabricated modular building panel as an article of manufacture comprising a three-dimensional lattice fabricated of a plurality of slender elongated metal elements arranged to define a pair of substantially parallel spaced major lattice surfaces, side and end lattice edge surfaces, and a plurality of strut members traversing the interior of the lattice and interconnecting the major surfaces thereof to define a plurality of passages within the lattice open at at least one end thereof to one of the edge surfaces, and thermal insulating filler material disposed within the lattice to extend from side to side and from end to end of the lattice, the filler material being held in position within the lattice by the elements defining the lattice, the filler material being comprised of a plurality of insulative elements positioned in the passages through the open ends of the passages to be disposed wholly within the lattice and sized relative to the passages to make substantial positioning contact with the lattice elements defining the respective passages whereby the insulative elements are held in predetermined positions within the lattice by the lattice itself, and a bonding agent disposed between the insulative elements and the adjacent lattice elements for immovably fixing the insulative elements in said predetermined positions within the lattice, wherein the bonding agent is comprised of a layer of cellular foamed material foamed at least in part and at least partially hard set within the lattice.

3,879,909
PROCESS FOR ACCELERATING CURE AND ENHANCING ULTIMATE STRENGTH OF PREFABRICATED MASONRY STRUCTURES

Lz F. Lamoria, Bay City, and Dallas G. Grenley, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

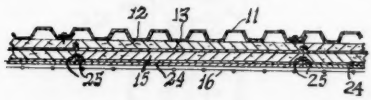
Filed June 12, 1974, Ser. No. 478,479
Int. Cl. E04b *2/04*
U.S. Cl. 52—309 **4 Claims**

1. A process for accelerating the cure and enhancing the ultimate strength of prefabricated masonry structures wherein such process comprises (1) utilizing as the mortar in such structures a portland cement mortar containing a vinylidene chloride polymer latex in an amount sufficient to provide from about 5 to about 20 percent by weight of polymer solids based on the weight of mortar and (2) substantially uniformly heating the non-cured prefabricated masonry structure to temperatures of from about 110° to about 210°F under less than about 80 percent relative humidity for a period of at least about 2 hours.

3,879,910
TEMPERATURE AND SOUND INSULATED PANEL

William Waite, Chicago, Ill., assignor to Transco Inc., Chicago, Ill.

Filed Sept. 7, 1972, Ser. No. 286,897
Int. Cl. E04b *1/74;* **E04c** *2/00*
U.S. Cl. 52—145 **3 Claims**



1. A temperature and sound-insulated panel for wall constructions and the like consisting of a plurality of superimposed members comprising

a. a metallic corrugated facing,

b. a first fibrous heat-insulating batt to one side of said corrugated facing,

c. a sound-absorbing lead sheet of a size greater than said insulating batt so as to cover one face of said insulating batt and provide portions bendable upon and covering the peripheral edges of said batt,

d. a second insulating batt of a size equal to said first insulating batt and positioned upon and covering the sound-absorbing lead sheet,

e. a solid backing of heat-reflective moisture-restraining foil covering the exposed side of said second insulating batt,

f. a wire mesh retainer positioned upon the exposed face of said solid backing so as to form a base for the plurality of superimposed members,

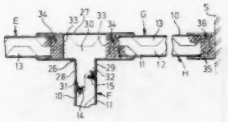
g. and a plurality of connectors carried by said corrugated facing and extending perpendicular therefrom and penetrating said superimposed members for securing the same together in a prefabricated panel.

3,879,911
PARTITIONING

Francis John Howells, Telford, England, assignor to GKN Sankey Limited, Stafford, England

Filed Apr. 24, 1973, Ser. No. 354,109
Claims priority, application United Kingdom, Apr. 29, 1972, 19997/72
Int. Cl. E04b *1/62*
U.S. Cl. 52—588 **3 Claims**

1. A partition comprising two sections each of which comprises two metal side walls and a rigid board of heat insulating material which is interposed between the side walls, the side walls of each section having at at least one side edge of the section inturned flanges disposed in spaced parallel planes and each of a width less than one half of the thickness of the section, the sections being fitted together so that their said one side edges are disposed in abutting relationship with the two

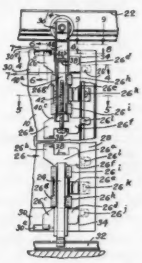


flanges at each side of the partition in abutting face-to-face contact, the abutting flanges at at least one side of the partition having formations which are releasably engaged by joint means enclosed within the partition and spaced from the side walls at the other side of the partition whereby the sections are detachably secured together.

3,879,912
HARDWARE FOR A SLIDING DOOR INSTALLATION

Arthur T. Cox, City of Industry, Calif., assignor to Arthur Cox & Sons, City of Industry, Calif.

Division of Ser. No. 185,222, Sept. 30, 1971, Pat. No. 3,744,827. This application Feb. 20, 1973, Ser. No. 333,640
Int. Cl. F16b *7/00*
U.S. Cl. 52—720 **6 Claims**



1. A rail for framing an edge of a panel, the rail comprising:

an elongated frame member having front, intermediate and rear walls forming an elongated channel for receiving the edge of a panel and also having a holding flange integral with said rear wall that extends toward said intermediate wall;

said rear wall being angled relative to said front wall so that the distance between said rear and front walls decreases with increasing distance from said intermediate wall;

said holding flange diverging away from rear wall with decreasing distance of said holding flange from said intermediate wall;

said rear wall having a respective alignment slot near each end thereof being located a predetermined distance from the adjacent end of said rear wall; and

said frame member including an integral tab portion adjacent to said slot and extending inward within said channel adjacent to said intermediate wall restricting the width of said channel in the region of said intermediate wall.

3,879,913

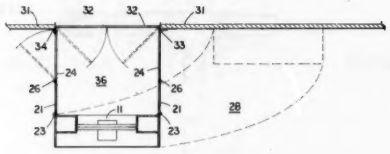
PORTABLE WINDOW-SERVICE COUNTER UNIT AND METHOD

Larry G. Clark, 5532 Hollister Dr., Indianapolis, Ind. 46224

Division of Ser. No. 376,800, July 5, 1973, Pat. No. 3,841,037. This application July 24, 1974, Ser. No. 491,236

Int. Cl. E04h *1/06*; E04b *1/343*

U.S. Cl. 52—741 3 Claims



1. A method of providing a temporary customer-service window in a building having entrance door means in an exterior wall, the method comprising the steps of:

rolling into position facing the building entrance door means, a portable window unit;

securing wall means between the building wall and the unit at least one side of said door means whereby a customer service vestibule is formed within the building between the customer facing side of said unit and said exterior door means.

3,879,914

METHOD OF MAKING A PLATFORM STRUCTURE

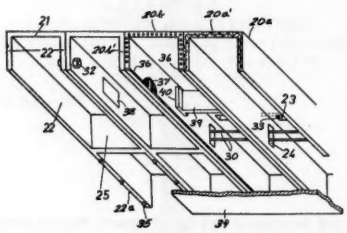
Hans Haller, and Erwin Wendl, both of Nibelungengasse 40, Graz, Austria

Division of Ser. No. 75,851, Sept. 28, 1970, Pat. No. 3,767,153. This application May 24, 1973, Ser. No. 363,529

Claims priority, application Austria, Sept. 23, 1969, 9016/69

Int. Cl. E04g *21/14*

U.S. Cl. 52—745 1 Claim



1. A method of making a concrete platform comprising the steps of:

casting a plurality of downwardly open U-section concrete structural elements each having a horizontal web and a pair of downwardly extending flanges running longitudinally along said web in a mold having an outer form and an inner form removable from said outer form:

embedding in said flanges inserts lying between the surfaces of the inner and outer form;

removing each of the cast-concrete elements on a respective inner form from the outer form prior to the hardening of the concrete element into a self-supporting condition but after an initial setting of the concrete;

hardening the concrete element upon the inner form out of the outer form to a self-supporting condition;

casting further concrete elements similarly on respective inner forms in said outer form during the hardening of the previously removed cast-concrete elements;

separating each cast-concrete element from the respective inner form only when the cast element has attained a self-supporting condition;

assembling the self-supporting elements in laterally contiguous relationship to form a platform and knocking out said inserts to form through openings in said flanges whereby the openings of adjacent cast-concrete elements are aligned;

passing reinforcing members through said openings with clearance;

fitting between flanges of at least some of said elements, transverse supports sustaining the flanges against inward forces produced by said members; and

tensioning the reinforcing members between the outermost flanges on opposite sides of said platform, thereby placing said supports under compression.

3,879,915

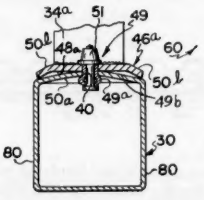
SPACER ELEMENT FOR STRUCTURAL UNIT

Wayne G. Atwater, Willoughby, Ohio, assignor to The Triax Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 301,528, Oct. 27, 1972, Pat. No. 3,840,124. This application July 1, 1974, Ser. No. 484,660

Int. Cl. F16b *7/18*

U.S. Cl. 52—758 C 12 Claims



1. A connecting plate-like member for securing a laterally extending connecting member adapted for coupling to said plate-like member, to a vertically oriented relatively thin walled column member of a structural unit, said plate-like member including laterally spaced column engaging portions and an intermediate recess portion adapted for disposal in confronting relation to a substantially planar web of the column member, means on said plate-like member for inserting an actuatable fastener through said plate-like member in fastening coaction with the web of the column member, whereby tightening actuation of the fastener will cause outward bulging of the column web at the connection of the fastener to the column, and into said recess portion, thereby causing prestressing of the column at the connection whereby the rigidity of the connection will be enhanced.

3,879,916

FATIGUE RESISTANT SPANWISE SPLICE

Carroll R. Bigham, Dunwoody, Ga., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

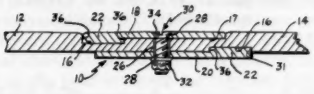
Filed July 22, 1974, Ser. No. 490,599

Int. Cl. F16b *5/06*

U.S. Cl. 52—758 D 7 Claims

1. In a splice for fastening a pair of panel members in fixed relationship with respect to one another, the improvement therein comprising the position of said members being such that one edge of each of said members is located juxtaposed the other and a predetermined amount of space is left between said edges, each of said members having a groove on only one surface thereof, said groove on one of said members facing in

a direction opposite said groove on said other member, a pair of elongated plates, one of said plates engaging said groove on one of said members, the other of said plates engaging said



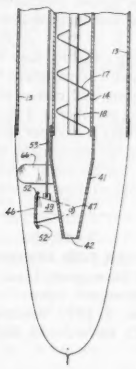
groove in the other of said members and means located within said space between said members operably connected to said pair of plates for fixedly securing said plates together thereby fixedly securing said members together.

3,879,917

METHOD AND APPARATUS FOR PACKAGING PARTICULATE MATERIAL

Derrick Arthur Bassendale, Ancaster, Ontario, and Derrick Bartram, Mississauga, Ontario, both of Canada, assignors to FMC Corporation, New York, N.Y.

Filed Jan. 10, 1973, Ser. No. 322,523
Int. Cl. B65b *9/12*
U.S. Cl. 53—28 **22 Claims**



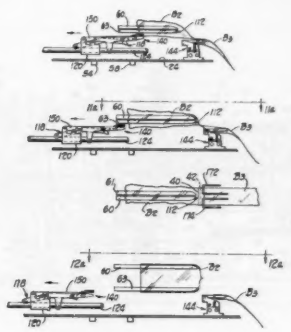
1. In the cyclic process for the packaging of dusty powders which comprises intermittently and repeatedly feeding a predetermined quantity of said powder, and discharging said quantity from an outlet into a tube of film having a closed bottom to form a body of powder in said tube, and heat-sealing said tube between said outlet and the body of powder within said tube, each cycle of said process comprising said feeding and heat-sealing steps, wherein the improvement comprises, in each cycle, feeding said predetermined quantity of powder into nozzle means, said nozzle means having an inlet and an outlet and being already filled with powder supplied thereto previous to said cycle and having said powder packed at said nozzle and bridging said outlet, and, by said feeding, forcing a stream of powder from said nozzle outlet into said tube, said nozzle outlet being narrower than said nozzle inlet and being sufficiently narrow that the powder becomes packed at said outlet and bridges said outlet preventing substantial further flow therefrom at the conclusion of each of said feeding steps while said nozzle means remains filled with said powder.

3,879,918

METHOD FOR PACKAGING ARTICLES

Hershey Lerner, Toledo, Ohio, assignor to Automated Packaging Systems, Inc., Twinsburg, Ohio

Division of Ser. No. 211,924, Dec. 27, 1971, Pat. No. 3,774,367. This application May 11, 1973, Ser. No. 359,436
Int. Cl. B65b *57/02, 43/12, 43/26*
U.S. Cl. 53—30 **9 Claims**



1. A method of applying a tubular member composed of a plastic film to an article wherein the tubular member comprises a circumferentially continuous article engaging wall terminating at an article receiving mouth and wherein the maximum cross section area of the tubular volume defined by the wall in a relaxed condition is substantially smaller than the cross sectional area of the article comprising:

a. feeding said tubular member to a loading station;

b. positioning said tubular member about a plurality of expander members having projecting ends extending into said tubular member through said mouth;

c. providing signal structure adjacent a projecting end of an expander member for sensing an end of said tubular member, providing a signal in response to the sensed presence of the end of the tubular member opposite said mouth at the projecting end of said expander member and terminating the feeding of said tubular member;

d. resiliently expanding the volume of said tubular member by relatively moving said expanded members, in response to said signal, to locations at which the cross sectional area defined by said mouth and at least part of the tubular volume defined by the wall is greater than the cross sectional area of the articles;

e. inserting the article through the mouth along a path extending between the expander members;

f. establishing a controlled frictional relationship between said tubular member and said expander members to enable relative movement between said expander members and said tubular member in the direction of extent of the expander members;

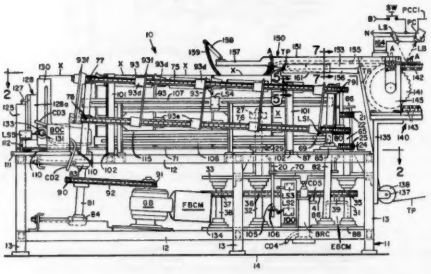
g. moving said tubular member and article in the direction of said path relative to said expander members to remove said tubular member from about said expander members and to remove the article from between the expander members while maintaining said expander members at said locations; and,

h. resiliently contracting said tubular member toward its relaxed condition so that said wall is contracted about the article as the tubular member and article are removed from the expander members and the article engaging wall of the tubular member tightly engages and at least partly assumes the contour of the article.

3,879,919
ARTICLE HANDLING APPARATUS

Edward S. Walker, and George A. Douglas, both of Danville, Ky., assignors to Corning Glass Works, Corning, N.Y.

Filed May 6, 1974, Ser. No. 467,281
Int. Cl. B65b 57/20, 19/34
U.S. Cl. 53—59 R 16 Claims



9. Apparatus for loading a preselected plurality of similar elongate cylindrical articles in each of a series of similar containers such as open top boxes having an interior width greater than the length of said articles, such apparatus comprising, in combination:

I. means for transporting said series of boxes lengthwise, stepwise and sequentially through a succession of collinear stations including a preloading station, a loading station, an intermediate station and a box exit station;

II. a tape supply source for supplying tape in alignment with said stations, such tape having a width less than said interior width of said boxes,

III. article transport means collinear with said stations and for receiving said articles and sequentially transporting such articles to said loading station and depositing such articles on and across a length of said tape drawn over the open top of a box as it is transported to the loading station;

IV. means for counting said articles as they are supplied to and received by said article transport means;

V. tape dispensing means for periodically dispensing short lengths of said tape from said tape supply source to a box at said loading station, such tape dispensing means controlled by said counting means in accordance with preselected quantities of said plurality articles counted by such counting means, and such short lengths of tape lowering said articles into a box as the articles are deposited on and across said length of tape extending across a box at the loading station;

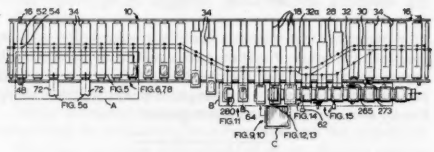
VI. means controlled by said counting means for actuating said article transport means each time such counting means counts said preselected plurality of articles and simultaneously disabling said tape dispensing means so that a box being transported from said loading station draws a length of said tape from said supply source thereof and across the length of the open top of a box being transported into such loading station, and reenabling the dispensing means following the completion of the box movements; and

VII. means for severing the tape extending between each adjacent pair of boxes as each respective such pair are transported toward said box exit station.

3,879,920
MACHINE FOR FORMING WRAP-AROUND SHIPPER PACKAGES

Marinus J. M. Langen, Rexdale, Ontario, Canada, assignor to H. J. Langen & Sons Ltd., Rexdale, Ontario, Canada

Filed Jan. 17, 1974, Ser. No. 434,043
Int. Cl. B65b 57/06, 57/12
U.S. Cl. 53—63 18 Claims



1. A packaging machine comprising

a. a carton wrapping station having an input and an output end,

b. a first conveyor means having a longitudinally extending marginal edge spaced laterally from said wrapping station,

c. a plurality of article receiving compartment forming members mounted on said first conveyor means for movement therewith in the longitudinal direction of travel of said first conveyor,

d. means for moving said compartment forming members laterally of said first conveyor means into and out of said wrapping station as said compartment forming members move in the longitudinal direction of travel of said conveyor,

e. means for locating a carton blank in said wrapping station in advance of each compartment forming member,

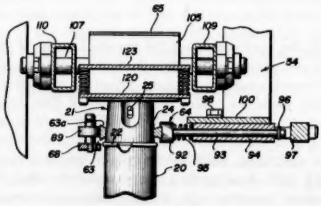
f. means for wrapping said carton blanks about each compartment forming member as it moves through said wrapping station to form a wrapper sleeve,

g. discharge means for discharging an article and its wrapper from said compartment forming members at the output end of said wrapper station.

3,879,921
OVERCAP SEATER FOR AEROSOL CONTAINERS

George E. Leonard, Davenport, Iowa, assignor to The Kartridge Pak Co., Davenport, Iowa

Filed Nov. 5, 1973, Ser. No. 412,647
Int. Cl. B67b 5/100; B65b 7/28
U.S. Cl. 53—325 18 Claims



7. In combination with a conveyer having a continuously driven conveyer belt for moving aerosol cans having overcaps positioned thereon along a generally rectilinear path, wherein each can includes an upper circular chime defining a seat area for an overcap within which the overcap is frictionally received and seated and each overcap includes a top wall and a generally cylindrical and cross-sectionally radially distortable skirt depending from the top wall the lower edge of which is receivable in the seat of the can, an overcap seater for seating overcaps onto the can in the seat within the chime comprising

a head, means mounting the head relative to the conveyer belt, means mounted on the head overlying the conveyer belt for engaging the overcap skirts and rotating the overcaps to radially distort the overcap skirts including a guide rail and an endless power driven overcap rotation belt coacting with the guide rail to engage the skirt of the overcap to apply a force sufficient to cross-sectionally radially distort same and thereby assure entry and seating of the lower edge of the overcap skirt within said chime of the can in the seat area, and means mounted on the head overlying the conveyer belt coacting with overcap rotating and overcap skirt distorting means for applying a downward force on the overcap to seat same in the seat within the chime.

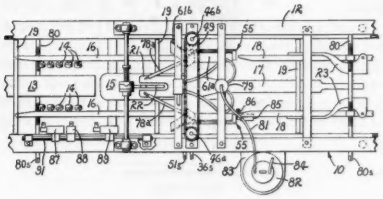
3,879,922
MACHINE FOR CLOSING AND SEALING ERECTED CARTONS

Edward J. Derderian, 4514 N. Wilson Ave., Fresno, Calif.

Continuation-in-part of Ser. No. 871,446, Oct. 20, 1969, abandoned, which is a continuation of Ser. No. 678,420, Oct. 26, 1967. This application Mar. 12, 1971, Ser. No. 123,700

Int. Cl. B65b *7/20*

U.S. Cl. 53—374 **8 Claims**



1. An apparatus for applying adhesive to pivotally supported flaps extended upwardly from the vertical walls of cartons and adapted to be displaced to carton-closing positions comprising:

A. positioning means for positioning said flaps at an angle greater than 90° and less than 180° with respect to said carton-closing positions including flap guide means comprising elongated spaced apart guide elements for receiving said flaps therebetween mounted for vertical and horizontal adjustment relative to said apparatus for accommodating cartons of various widths and heights;

B. means including a plurality of extrusion heads, each including a plurality of openings adapted to issue adhesive in a fluid state and to apply said adhesive to selected surfaces of one of said flaps as the flap is maintained at said angle;

C. means including a plurality of moisture transmitting pads, each being associated with one head of said plurality of heads;

D. a plurality of water containers operatively associated with said pads adapted to deliver moisture to said pads; and

E. means resiliently urging said plurality of heads into engagement with said plurality of pads for inhibiting the drying of adhesive within the openings of the heads.

3,879,923
CITRUS RAKE

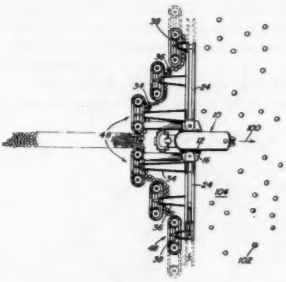
Charles C. Granger, 1703 Chestnut St., Henderson, N.C. 27536

Filed Nov. 8, 1973, Ser. No. 414,138

Int. Cl. A01g *19/00*; **A01d** *77/06*

U.S. Cl. 56—328 **13 Claims**

1. In combination, a mobile vehicle for movement in a first direction, a support arm including a base end and a free end, support means supporting the base end of said support arm from said vehicle with the outer free end of said arm projecting outwardly of one side of said vehicle transverse to said direction, an elongated horizontal conveyor assembly, mounting means supporting said conveyor assembly from said arm with said conveyor assembly extending longitudinally of said arm, said conveyor assembly including depending fruit engaging means supported therefrom adapted to engage fruit lying on the ground over which said arm is moved and to convey the engaged fruit along the ground toward the center of the path of movement of said vehicle, said mounting means including means supporting a longitidinal central portion of said conveyor assembly for oscillation about a horizontal axis extending transversely of said conveyor assembly and said support arm, and also means supporting said longitudinal central portion of said conveyor assembly from said arm for floating vertical shifting relative to said arm, said conveyor assembly including dependingly support opposite end ground engageable support means adapted to engage the ground and vertically and oscillatably shift said conveyor assembly according to irregular ground surfaces over which said ground engageable support means may be moved.



3,879,924
LACING DEVICE FOR STRANDING MACHINES

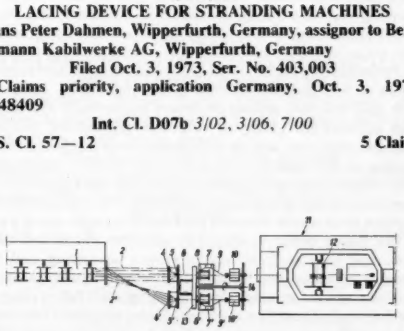
Hans Peter Dahmen, Wipperfurth, Germany, assignor to Bergmann Kabilwerke AG, Wipperfurth, Germany

Filed Oct. 3, 1973, Ser. No. 403,003

Claims priority, application Germany, Oct. 3, 1972, 2248409

Int. Cl. D07b *3/02*, *3/06*, *7/00*

U.S. Cl. 57—12 **5 Claims**

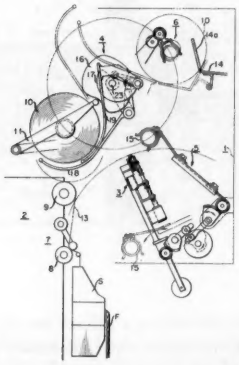


1. In a stranding machine including a unit for winding stranded cord consisting of a stranding disk including a stranding axis and a spinning head, characterised in that as a reserve for the unit there is at least one further unit consisting of a stranding disk and a spinning head further including common shaft means connecting the units so they can be alternatively rotated into the stranding axis.

3,879,925
ROTARY DOFFER IN AUTOMATIC DOFFING APPARATUS

Toshio Yoshizawa, Chiryu; Yasuo Yamada; Toshinori Taniguchi, both of Kariya; Tatsuo Kose; Kazuo Ohchi, both of Yoshihara, and Kiyokazu Hori, Sabae, all of Japan, assignors to Kabushiki Kaisha Toyodo Jidoshiokki Seisakusho, Kariya and Daiwa Boseki Kabushiki Kaisha, Osaka, both of, Japan

Filed Dec. 5, 1973, Ser. No. 421,927
Int. Cl. D01h *9/10*
U.S. Cl. 57—53 5 Claims

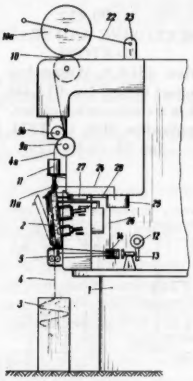


1. In an automatic doffing apparatus, a rotary doffer adapted for use with a spinning machine having a plurality of spinning units arranged in side-by-side relation, for performing a doffing operation of demounting full packages one by one from the respective spinning units and applying empty bobbins to the spinning units, from which the full packages have been demounted, while travelling along the front of the spinning machine during operation of the same: said rotary doffer comprising: a rotary shaft; a support fixedly secured to said rotary shaft; a pair of first and second package receiving and transporting members pitovally mounted on said support; a pair of first and second cam means operatively associated with said first and second members respectively and having cam surfaces for giving to said first and second members different rotational and pivotal combination motions so that a portion of the doffing operation, which portion comprises at least demounting and receiving each full package from the respective spinning unit and transporting it to a predetermined position from which each full package is brought out of a path of said rotary doffer, is shared by said first and second members, said cam surfaces having shapes advancing said first member to come into contact with the full package earlier than said second member, for pushing up each full package by the free end of said first member, for locating said first member in a package receiving position below the package while moving the free end of said first member substantially horizontally, for advancing said second member so as to be ready to contact the package when said first member reaches substantially the package receiving position, for further advancing said first and second members so as to transfer the package from said first member to said second member, and for rapidly advancing said second member to the predetermined position from which the package is brought out of the path of said rotary doffer.

3,879,926
METHOD AND APPARATUS FOR CONTROLLING THE REJOINING OF THREAD IN AN OPEN ENDED SPINNING MACHINE

Gerhard Bartling, Burgstetten, and Michael VonRonai-Horvath, Von Ronai-Horvath; Michael, Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany

Filed Aug. 1, 1973, Ser. No. 384,412
Claims priority, application Germany, Aug. 5, 1972, 2238610
Int. Cl. D01h *1/12, 1/28*
U.S. Cl. 57—58.95 15 Claims



3. An open end spinning machine comprising frame, a housing pivotally mounted on said frame having means for automatically moving said housing between a closed working position and at least a partially open position, a spinning unit located in said frame comprising a rotatable turbine and a rotatable means for feeding fibers to said turbine to be spun into a continuous thread, a tangential belt drive means mounted on said frame for rotating each of said turbine and feed means, said turbine and said feed means having a drive shaft extending therefrom engageable and disengageable with said belt drive means on closing and at least partially opening of said housing with respect to said frame, means for sensing the continuity of said spun thread, means for sensing a fault in the operation of each of said turbine and feed means, said sensing means respectively producing a continuity of signals on interruption of said spun thread, and a fault signal on determining a fault in said turbine and on determining a fault in said feed means, control means responsive to each of said signals to actuate said means for moving said housing to disengage the shaft of said turbine and feed means from said tangential belt to interrupt the spinning of said fibers.

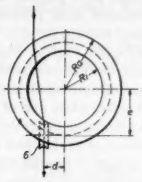
3,879,927
FALSE TWISTING DEVICE

Michael Bueb, Opladen; Karlheinz Feltgen, Straberg; Edgar Muschelknautz, Leverkusen, and Wolfgang Rellensmann, Zons u. Neuss, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 20, 1974, Ser. No. 452,928
Claims priority, application Germany, Mar. 20, 1973, 2313723
Int. Cl. D02g *1/04*
U.S. Cl. 57—77.4 8 Claims

1. A false twister for the production of synthetic textured or stretch-type yarns or filaments, consisting of two or more successive internal friction twisters, wherein the inlet-end

friction surfaces of the internal friction twister mouthpieces (1) have a high coefficient of friction whilst the friction surfaces of the outlet mouthpieces (2) have a low coefficient of friction in relation to the friction surfaces at the inlet end.



3,879,928

PROCESS FOR THE MANUFACTURE OF YARN AND THE RESULTING PRODUCT

Marvin Usdan, Woodmere, N.Y., assignor to Perfect Thread Company, Inc., Valley Stream, N.Y.

Filed Nov. 1, 1973, Ser. No. 411,786

Int. Cl. D01h *13/26*; **D02g** *3/00*

U.S. Cl. 57—157 TS **9 Claims**

1. A process for the preparation of low-torque textile yarn comprising, imparting a high twist to a thermoplastic yarn in one direction, heat-setting the yarn in the high twist condition, detwisting the yarn so that a torque in the direction opposite to said high twist is imparted thereto, applying a second heat-setting to the yarn, and thereafter imparting a low twist in the same direction as said torque to the yarn.

3,879,929

DIGITAL-DISPLAY WATCH MOVEMENT

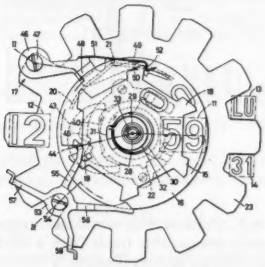
Adrien Maurice Charbonney, deceased, late of Saint Blaise, Switzerland; Jean-Jacques Therens, legal representative, Saint-Blaise, Switzerland, and Urs Giger, Solothurn, both of Switzerland, assignors to Eta A.G. Ebacuhes-Fabrik, Grenchen, (Canton of Soleure), Switzerland

Filed Aug. 19, 1974, Ser. No. 498,429

Claims priority, application Switzerland, Aug. 20, 1973, 11957/73

Int. Cl. G04b *19/24*, *19/02*

U.S. Cl. 58—5 **12 Claims**



1. A digital-display watch movement comprising a base plate, a dial provided with at least one aperture, and three coaxial jumping indicator members visible in said aperture or apertures, the first said indicator member indicating the tens figures of the minutes, the second said indicator member indicating the units figures of the minutes, and the third said indicator member indicating the hours, further comprising three continuously rotating driving members, each associated with one of said indicator members to form with it a pair of coaxial rotating parts coupled to one another by a spring, said pairs being superimposed between said dial and said base plate, said first indicator member extending immediately beneath said dial, and further comprising a display bridge and three levers acting as pallets and pivoting on said bridge, each lever cooperating with one of said indicator members to release it periodically, the first of said levers being actuated by said second indicator member, the second of said levers being actuated by the driving member of the second of said pairs of rotating parts, and the third of said levers being actuated by said first indicator member.

3,879,930

CLOCKWORK MOVEMENT COMPRISING A GEAR-TRAIN WITH A FRICTION CLUTCH THEREIN

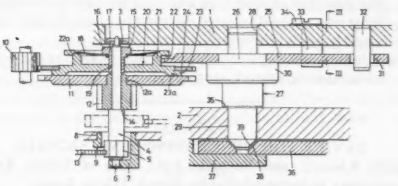
Hugues Burki, L'Orient, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere Management Services SA, Bienne, Switzerland

Filed July 5, 1974, Ser. No. 486,105

Claims priority, application Switzerland, July 10, 1973, 10033/73

Int. Cl. G04b *13/00*

U.S. Cl. 58—7 **12 Claims**



1. A clockwork movement comprising a gear train, and in said gear-train, a friction clutch comprising a driven part rotating about an axis and provided with an axially movable coupling element having a toothing, and a driving part coaxial with the driven part and provided with an axially immovable coupling element, wherein the said driven part comprises at least one further toothing which is axially immovable, and said clutch further comprises a rigid control member cooperating with the said axially movable coupling element and two members for guiding said control member and for causing it to effect movements of pure translation in a direction parallel to that of the axis of the clutch upon actuation of said clutch.

3,879,931

ELECTRONIC WATCH WITH AN ELECTRONICALLY OPERATED SOUND PRODUCER

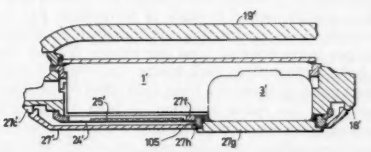
Tetuya Yasuda, Tokyo; Haruo Suda, Tokorozawa, and Noriyuki Kasama, Tokyo, all of Japan, assignors to Citzen Watch Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1973, Ser. No. 428,999

Claims priority, application Japan, Dec. 27, 1972, 48-1488; Dec. 28, 1972, 48-1801; Feb. 24, 1973, 48-22337

Int. Cl. G04c *21/34*

U.S. Cl. 58—38 **4 Claims**



1. In an electronically powered watch having a watch casing, a dial attached to one side of said casing, an electronically powered watch movement located within said casing and connected to indicating means on the external side of said dial

to indicate the time, an electronic alarm oscillator circuit located within said housing, an alarm switch coupled to said oscillator circuit and controlled by said indicating means, means actuable from externally of the watch casing to adjust the time of closing of said alarm switch, and a battery electrically connected to the watch movement and the alarm oscillator circuit, the improvements comprising:

a. a middle frame attached to a side of said casing opposite said dial, said middle frame having a plurality of openings therethrough, one of said openings surrounding said battery,

b. an irregular shape vibratory membrane attached to said middle frame so as to cover the unoccupied opening in said frame, said irregular shape vibratory membrane being located laterally adjacent to said battery;

c. means attached to said vibratory membrane and electrically connected to said electronic alarm oscillator circuit so as to cause said membrane to vibrate and emit an audible sound upon an electric input from said alarm oscillator circuit;

d. a rear cover attached to said case adjacent to said vibratory membrane and spaced therefrom, said rear cover having an opening therethrough coaxially with said battery to enable the removal of said battery therethrough, the junction of said case and said rear cover defining at least one radial discharge opening to allow passage of the audible sound therethrough; and

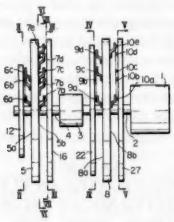
e. a battery cover removably attached to said rear cover to close said opening therethrough.

3,879,932

DEVICE FOR GENERATING TIME SIGNALS

Sachio Kimura, and Yoshiaki Aoki, both of Tokyo, Japan, assignors to Kabushikikaisha Copal, Tokyo, Japan

Continuation-in-part of Ser. No. 271,705, July 14, 1972, abandoned. This application Apr. 24, 1974, Ser. No. 463,526
Claims priority, application Japan, July 19, 1971, 46-63561
Int. Cl. G04b *19/30*
U.S. Cl. 58—50 R **7 Claims**



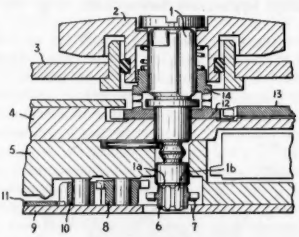
1. In a clock furnishing a digital indication of time and having at least 1 minute and 1 hour indicator units, each having a plurality of inputs, each for furnishing a visual output signal signifying a corresponding digit upon application of a code signal corresponding to said digit to said plurality of inputs; apparatus for furnishing said code signal, comprising, in combination, a minute shaft; means for rotating said minute shaft a predetermined number of revolutions per hour; an hour shaft; means for rotating said hour shaft a predetermined angle per every hour; at least one minute contact plate and one hour contact plate, each having a plurality of conducting contact portions separated from each other by predetermined distances in the radial direction; at least 1 minute pattern mounting plate associated with said minute contact plate; at least 1 hour pattern mounting plate associated with said hour contact plate, each of said pattern mounting plates having annular segmental conducting portions spaced from each other in a radial direction at distances corresponding to said predetermined distances separating the corresponding ones of said contacts, said annular segmental conducting portions including a primary portion covering 360°, each contact plate and an associated pattern mounting plate being mounted in operative proximity for relative rotation, said hour contact plate and the associated hour pattern mounting plate constituting a pair of associated hour plates, said minute contact plate and the associated minute pattern mounting plate constituting a pair of associated minute plates, one of said hour plates and one of said minute plates being mounted on said hour shaft and on said minute shaft respectively, each of said pairs consisting of an active plate and of a control plate; means for applying a predetermined potential to a selected one of said conducting portions of said active hour plate and of said minute plate, said selected conducting portion being said primary portion when said active plate is said pattern mounting plate; a plurality of minute and hour lead-out conductors, connected to each of the remaining conducting portions of said active minute and hour plates respectively; conducting means for forming substantially zero resistance connections among all of said conducting portions of each of said control plates, whereby rotation of said hour shaft and said minute shaft causes, respectively, each of said hour and minute lead-out conductors to be alternately connected to and disconnected from said predetermined potential, in accordance with the pattern, respectively, of said hour and minute pattern mounting plates, the signals on said hour and minute lead-out conductors constituting, respectively, said code signals for energizing said hour and minute indicator units.

3,879,933

HAND-SETTING MECHANISM FOR BACK WINDING WATCH

Yukio Ikehata, Ichikawa, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Aug. 23, 1974, Ser. No. 499,984
Claims priority, application Japan, Aug. 24, 1973, 48-94337
Int. Cl. G04b *27/04*
U.S. Cl. 58—68 **3 Claims**

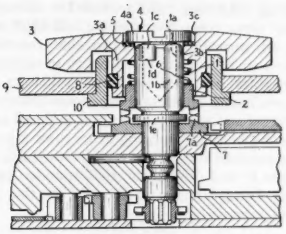


1. In a watch, a hand-setting mechanism comprising a winding stem axially displaceable freely from a winding first position to a hand-setting second position, a crown on said winding stem for axially displacing said winding stem and for rotating it, a transmission gear rotatably driven by said winding stem, a hand-setting gear train having a hand-setting gear coupleable to the transmission gear, semi-automatic means enabled by said winding stem when displaced to said second position thereof to couple said transmission gear and said hand-setting gear when the gear teeth of said transmission gear and said hand-setting gear are in phase for meshing and for enabling said winding stem to be freely displaceable to said second position when said gear teeth are not in phase for meshing.

3,879,934
FIXING MEANS FOR WINDING CROWN IN BACK WINDING WATCH

Yukio Ikehata, Ichikawa, and Katsutoshi Maeda, Tokyo, both of Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Aug. 30, 1974, Ser. No. 502,191
Int. Cl. G04b *37/00*
U.S. Cl. 58—88 B **2 Claims**



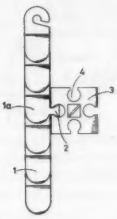
1. In a watch, a winding stem mounted for rotation for winding a winding mechanism and for driving a hand-setting mechanism, means mounting said winding stem rotationally and for movement axially between two operative positions corresponding to a first position for driving said hand-setting mechanism and a second position for setting the hands, said stem having a first axial portion having opposite flat surfaces, a clutch gear on said first axial portion movable axially thereon and rotational with said winding stem, a second axial portion on said winding stem having flat surfaces and a stepped portion on an end of said winding stem, a crown on said second portion having a through opening receiving said stepped portion and having inward projections seating on said stepped portion, said crown opening having a circular configuration along an axial extent thereof and a configuration along an axial extent thereof complementary to the cross section of said second portion for rotation with said winding stem and having said projections thereon seated on said stepped portion defining the axial position of said crown, said winding stem having a tapped blind bore extending from an end thereof axially into said first portion of said winding stem, a screw holding the winding stem seated axially against said stepped portion, said circular configuration of said through opening having a diameter greater than the transverse dimension of said complementary configuration, portion thereof, and said screw having a head fitting into said through opening along said axial extent thereof having said circular configuration.

3,879,935
TOY CHAIN

Artur Fischer, Altheimer Str. 219, D-7241 Tumlingen, Germany

Filed Jan. 7, 1974, Ser. No. 431,578
Claims priority, application Germany, Jan. 13, 1973, 7301232
Int. Cl. F16g *13/04*
U.S. Cl. 59—85 **8 Claims**

1. In a toy construction kit, in combination, a plurality of chain links connected together to form a toy chain, each chain link unit including two side members spaced from each other in direction transverse to the direction of elongation of said chain and extending in the general direction of elongation of said chain, the side members of each chain link unit having facing inner sides and also having outer sides, the side members of each chain link unit having first portions adjoining one of two neighboring chain link units and having second portions adjoining the other of the two neighboring chain link units, the inner sides of the first portions of the side members of each chain link unit being spaced from each other a distance at least equal to the spacing between the outer sides of the second portions of the side members of the chain link unit, each chain link unit further including connecting means connecting together the two side members of the chain link unit and configurated to releasably engage the connecting means of the adjoining chain link unit, with the second portions of the two side members of each chain link unit being nested between the first portions of the two side members of the

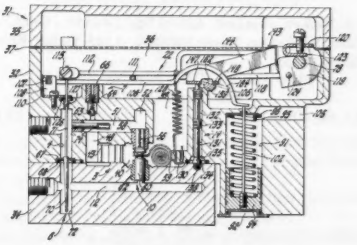


adjoining chain link unit; and engaging means on at least one of said chain link units configurated to be releasably engageable with a complementary engaging means of a predetermined complementary configuration, said engaging means comprising two projecting portions each of one piece with a respective one of the first portions of the side members of said one of said chain link units and each projecting in direction transverse to the direction of elongation of said chain.

3,879,936
GAS TURBINE FUEL CONTROL

Donald D. Stoltman, Henrietta, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed July 19, 1973, Ser. No. 380,992
Int. Cl. F02c *9/10*
U.S. Cl. 60—39.28 R **8 Claims**



1. A fuel supply system for a gas turbine engine comprising a pump for delivering fuel under pressure, a metering head regulating by-pass valve connecting the outlet of the pump to the pump inlet, a fuel metering valve supplied by the pump, and a fuel delivery conduit to the engine combustion apparatus supplied through the fuel metering valve, in combination with controlling means comprising; a settable power level control; means responsive to combustion chamber pressure; multiplying means actuated by the power level control and the pressure responsive means operative to control the metering valve to maintain metering valve effective area a predetermined function of the product of the said pressure and the power level setting; means responsive to ambient air temperature; and means actuated by pressure drop across the metering valve and the temperature responsive means operative to control the by-pass valve to maintain metering head proportional to ambient temperature.

3,879,937
AERODYNAMIC PRESSURE-WAVE MACHINE

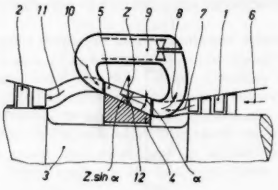
Ernst Jenny, Baden, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Sept. 4, 1973, Ser. No. 393,818

Claims priority, application Switzerland, Oct. 25, 1972, 15520/72

Int. Cl. F02c *3/02*

U.S. Cl. 60—39.45 **3 Claims**



1. In an aerodynamic pressure-wave machine having a rotor provided with cells extending from one end thereof to the other, the respective ends of the rotor being located between two stationary side portions of the machine, and wherein one of said side portions incorporates inlet and exhaust ports for hot gas to be expanded and the other side portion incorporates inlet and exhaust ports for cold gas to be compressed, the improvement wherein particularly for operation of the machine under conditions where the pressure of the compressed cold gas and the hot gas to be expanded differ but little in the high-pressure zone whereas the pressure of the expanded hot gas in the low-pressure zone is substantially higher than the pressure of the cold gas to be compressed, the cells of said rotor are inclined with respect to the rotor axis such that opposite ends of the cells lie on different diameters, the hot gas entering and also leaving at the end of the rotor having the greater cell diameter and the cold gas entering and also leaving at the end of the rotor having the smaller cell diameter.

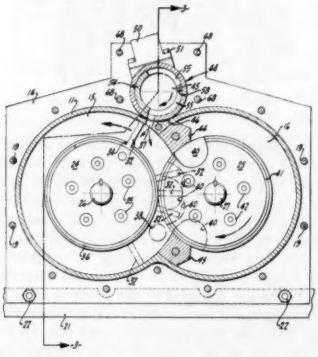
3,879,938
ROTARY ENGINE APPARATUS

Clark I. Rinker, deceased, late of San Leandro, Calif., and by Juanita S. Rinker, administratrix, 1345 Oakes Blvd., San Leandro, Calif.

Filed Jan. 12, 1973, Ser. No. 323,233

Int. Cl. F02c *5/00*

U.S. Cl. 60—39.61 **12 Claims**



1. In a rotary engine a casing defining an expansion cylinder therein provided with angularly spaced inlet and exhaust openings; a drive rotor rotatably mounted within said expansion cylinder and having surface areas spaced from the circumjacent walls thereof to provide an expansion chamber therewith; said drive rotor having thrust structure comprising a single vane component extending outwardly from said rotor into leakage-inhibiting relation with such circumjacent walls of said expansion cylinder and providing a pressurizable surface against which a pressure force can act to impart torque to said rotor; said drive rotor circumjacently secured to a driven shaft to transfer torque developed by said rotor; pressure force reaction structure comprising a reaction cylinder provided by the aforesaid casing and a reaction rotor rotatably mounted within said reaction cylinder, said structure operative in leakage-inhibiting relation with the aforesaid surface areas of said drive rotor intermediate said inlet and exhaust openings and providing a pressurizable reaction surface against which such pressure force reacts in imparting torque to said drive rotor; and means including said inlet opening for cyclically developing within said expansion chamber intermediate said thrust and reaction structures in timed relation with the angular displacements of said drive rotor a gaseous pressure charge expansible between said pressurizable surfaces to impart torque to said drive rotor, the expanded gaseous pressure charge being exhausted directly to the atmosphere through said exhaust opening.

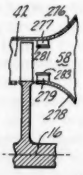
3,879,939
COMBUSTION INLET DIFFUSER EMPLOYING BOUNDARY LAYER FLOW STRAIGHTENING VANES

Stanley J. Markowski, East Hartford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Division of Ser. No. 352,136, April 18, 1973, abandoned, which is a division of Ser. No. 84,086, Oct. 26, 1970, Pat. No. 3,786,065. This application Jan. 17, 1974, Ser. No. 434,152

Int. Cl. F02c *3/14*

U.S. Cl. 60—39.65 **3 Claims**



1. An annular combustion chamber having an inlet and an outlet and being concentric about an axis and including:

A. outer and inner wall members of generally circular cross-section and concentric about said axis and cooperating to define a diffuser section, a combustion section and a dilution section in series axially among said combustion chamber, said diffuser section including:

1. an outer wall which diverges away from said axis in a downstream direction,

2. an inner wall which converges toward said axis in a downstream direction and cooperates with said outer wall to define a divergent annular diffuser passage therebetween,

3. means to pass fluid into said combustion chamber inlet,

4. means to establish the flow characteristics to be axial flow along said walls and to have a tangential component in the central region between the axial flow regions, and

5. wherein said fluid passing means is constructed to pass swirling fluid into said combustion chamber inlet, and wherein said flow characteristics establishing means comprise flow straightening vanes positioned circumferentially about and projecting substantially radially inwardly from said outer wall member and radially outwardly from said inner wall member to cause the flow along said walls to be substantially axial, while the

flow in the central region continues to swirl so as to have a substantial tangential component.

3,879,940

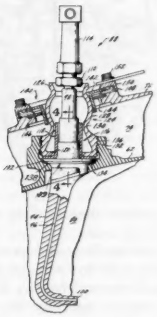
GAS TURBINE ENGINE FUEL DELIVERY TUBE ASSEMBLY

Richard E. Stenger, Cincinnati; Alfred St. George, West Chester, and Peter F. Kepf, New Richmond, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed July 30, 1973, Ser. No. 384,000

Int. Cl. F02c *7/22*

U.S. Cl. 60—39.74 R **13 Claims**



1. In a gas turbine engine of the type including a compressor, a combustor having associated therewith at least one fuel/air carbureting device, a turbine operative to drive said compressor, and a low pressure fuel tube adapted to deliver fuel to said carbureting device, said fuel tube including an inlet for receiving fuel and an outlet for delivering fuel to said carbureting device, the improvement comprising:

means for removably connecting said fuel tube to said combustor, said connecting means including alignment means for preventing connection of said tube to said combustor except when said outlet is properly aligned with said carbureting device, wherein said fuel tube includes a main body portion having a fuel passage located therein, said alignment means includes an alignment collar adapted to surround at least a portion of said main body portion, said collar further includes a pin, and said main body portion includes an opening for receiving at least a portion of said pin, said combustor is surrounded by casing means and said casing means includes a groove for receiving said pin when said pin is located within said opening.

3,879,941

VARIABLE CYCLE GAS TURBINE ENGINE

Donald Farley Sargisson, Cincinnati, Ohio, assignor to General Electric Company, Lynn, Mass.

Filed May 21, 1973, Ser. No. 362,380

Int. Cl. F02k *3/02*

U.S. Cl. 60—226 R **21 Claims**

1. A variable cycle gas turbine engine comprising:

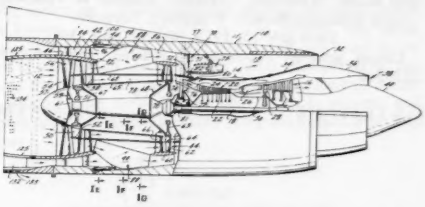
a fan having a forward section axially spaced apart from an aft section;

a variable flow bypassing valve disposed intermediate the forward and aft fan sections whereby a portion of the airflow between the forward and aft fan sections may be connected either in serial flow relation or in bypassing parallel relation, and

wherein the variable flow bypassing valve includes a plurality of axially extending and circumferentially spaced apart ducts each of which is hinged at one end to the forward fan section to receive a portion of the pressurized airflow exiting from the forward fan section;

means for simultaneously rotating the ducts about their hinges;

a variable flow geometry inlet duct in direct flow connection to the fan for furnishing an inlet airflow to the fan;



a core engine having a compressor, combustor and turbine in serial flow relation wherein the compressor receives another portion of the compressed airflow from the forward and aft fan sections; and

a fan turbine drivably connected to the fan.

3,879,942

PARTITION FOR ROCKET ENGINES

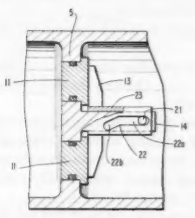
Wolfgang Dorn, Porz-Urbach; Heinrich Brandenburg, Cologne, and Rainer Schoffl, Bergisch Gladbach, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed June 22, 1973, Ser. No. 372,515

Claims priority, application Germany, June 22, 1972, 2230457

Int. Cl. F02k *9/06*

U.S. Cl. 60—245 **46 Claims**



1. A partition arrangement for separating first and second longitudinally spaced chambers of a rocket engine from one another comprising:

wall means having a first side facing said first chamber and a second side facing said second chamber,

at least one flow passage extending through said wall means from said first side to said second side,

plug means detachably insertable into each of said at least one flow passage such that said wall means and plug means from a continuous sealed partition between said first and second chambers when said plug means are in respective inserted sealing positions in said at least one flow passage and such that said at least one flow passage communicates said first and second chambers with one another when said plug means are in respective non-sealing positions,

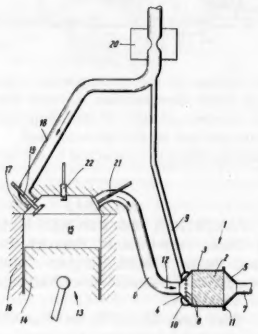
and plug control means for controlling movement of said plug means between said respective inserted sealing positions and predetermined non-sealing positions,

wherein said plug control means includes lateral force means for laterally forcing said plug means away from longitudinal alignment with said at least one flow passage after said plug means has moved longitudinally a predetermined distance from the respective sealing position thereof.

3,879,943
APPARATUS FOR EXHAUST GAS PURIFICATION THROUGH EXHAUST GAS CONVERSION AND EXHAUST GAS RECYCLING

Axel König, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed July 18, 1973, Ser. No. 380,138
Claims priority, application Germany, July 20, 1972, 2235568
Int. Cl. F01n *3/10*
U.S. Cl. 60—278 **4 Claims**



1. An internal combustion engine with apparatus for reducing, by catalytic conversion, the concentration of noxious components in combustion exhaust gases comprising:

a. a combustion chamber,

b. an exhaust gas conduit connected to receive exhaust gases,

c. an exhaust gas purifier housing connected to said exhaust gas conduit, said housing having a larger cross section than said conduit,

d. funnel-shaped means arranged upstream of said housing between said housing and said exhaust gas conduit, and providing an interconnection therebetween,

e. carrier means coated with catalytically active material and arranged in said housing,

f. port means arranged on said funnel-shaped means near said housing for withdrawing a portion of the exhaust gases at a first pressure upstream of said housing,

g. inlet means supplying a fluid to said combustion chamber, said inlet means comprising a space at a second pressure lower than said first pressure; and

h. conduit means communicating said port means and said space, where said portion of the exhaust gases is returned for recombustion in said combustion chamber.

3,879,944
CATALYTIC CONVERTER

Joseph F. Bertsch, Orchard Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 20, 1974, Ser. No. 452,737
Int. Cl. F01n *3/14*
U.S. Cl. 60—299 **2 Claims**

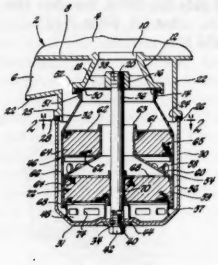
1. A device for the catalytic treatment of exhaust gases from an engine comprising, in combination:

a first can having two open ends, one of said open ends comprising an inlet opening for admittance of said exhaust gases, said first can having a further opening in the wall thereof;

a second can within the first can, said second can being funnel-shaped with a wide open end in engagement with the other open end of the first can and a narrow open end projecting past the wall opening toward the inlet end of the first can;

a first catalyst bed in the first can surrounding the narrow end of the second can, said first catalyst bed being located in the path of exhaust gases flowing toward said wall opening;

a second catalyst bed in the wide end of the second can in the path of exhaust gases flowing through said second can, the second catalyst bed having a frontal area for said



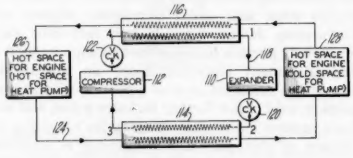
exhaust gases greater than the flow area in the narrow end of the second can; and

housing means surrounding said cans, said housing means defining a flow path for exhaust gases back along the outside of the first can whereby the heating of the first and second catalyst beds by the exhaust gases is increased.

3,879,945
HOT GAS MACHINE

John L. Summers, 41 Old Town Rd., Rockville, Conn. 06066

Filed Apr. 16, 1973, Ser. No. 351,659
Int. Cl. F01k *25/00*
U.S. Cl. 60—522 **12 Claims**



1. A cyclically operating hot gas machine including:

a working fluid;

expander means for cyclic expansion of said working fluid, said expander means having an expansion space with a fluid inlet and a fluid outlet and operating means in said expansion space for cyclic expansion of said working fluid;

compressor means for cyclic compression of said working fluid, said compressor means having a compression space with a fluid inlet and a fluid outlet and operating means in said compression space for cyclic compression of said working fluid;

first fluid circuit means in said hot gas machine, said first fluid circuit means being a closed circuit containing said working fluid, said expansion space and said compression space being in said closed fluid circuit, a first part of said closed fluid circuit extending from the outlet of said expansion space to the inlet of said compression space, and a second part of said closed fluid circuit extending from the outlet of said compression space to the inlet of said expansion space;

first counterflow heat exchanger means in said first part of said closed fluid circuit;

second counterflow heat exchanger means in said second part of said closed fluid circuit;

second fluid circuit means in said hot gas machine, said second fluid circuit means being connected in series to each of said first and second counterflow heat exchanger means and having a heat exchange fluid flowing therein, the direction of flow of said heat exchange fluid in said second fluid circuit means and said working fluid in said first fluid circuit means being opposite to provide counterflow heat exchange between said fluids;

heat source means in said second fluid circuit means;

cold source means in said second fluid circuit means;

one of said heat or cold source means being in said second fluid circuit means between said first and second counterflow heat exchangers;

said expander means and said compressor means cooperating during one part of the operating cycle of the hot gas machine to transfer working fluid from one of said expansion and compression spaces to the other of said spaces through one of said counterflow heat exchangers whereby heat is transferred from said heat exchange fluid to said working fluid to increase the pressure of said working fluid at substantially constant volume of said working fluid, and said expander means and said compressor means cooperating during another part of the operating cycle of the hot gas machine to transfer working fluid from the other of said expansion and compression spaces to said one of said spaces through the other of said counterflow heat exchangers whereby heat is transferred from said working fluid to said heat exchange fluid to reduce the pressure of said working fluid at a substantially constant volume of said working fluid; and

check valve means in each of said first and second parts of said first fluid circuit to permit fluid to flow only in one direction serially through said parts of said first fluid circuit to limit the direction of flow of said working fluid in said first fluid circuit to the direction required to effect counterflow heat exchange between said working fluid and said heat exchange fluid in said first and second counterflow heat exchangers.

3,879,946
BRAKE FAILURE INDICATOR

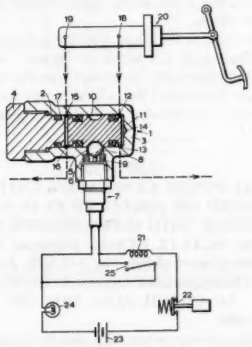
Glyn Phillip Reginald Farr, Kenilworth, England, assignor to Girling Limited, Birmingham, England

Filed Nov. 28, 1973, Ser. No. 419,663

Claims priority, application United Kingdom, Nov. 30, 1972, 55397/72; Dec. 30, 1972, 60278/72

Int. Cl. F15b *7/00*

U.S. Cl. 60—535 **6 Claims**



1. Means for detecting a difference in pressure between two hydraulic circuits, said detecting means comprising a piston movable in a cylinder, each end of said piston being exposed to fluid in a chamber defined in said cylinder, and said piston being provided with a substantially circumferentially extending groove in the outer surface thereof, connecting means to connect each chamber to one of said hydraulic circuits, indicating means, an actuating member for said indicating means and having a portion located in said groove, the cross-sectional profile of said groove being such that axial movement of said piston causes said actuating member to be displaced to actuate said indicating means, and limiting means for limiting axial movement of said piston to prevent said portion of said actuating member being disengaged from said groove.

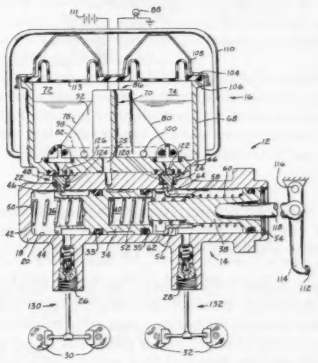
3,879,947
MASTER CYLINDER RESERVOIR

Robert F. Gaiser, St. Joseph, Mich., assignor to The Bendix Corporation, South Bend, Ind.

Filed Dec. 19, 1973, Ser. No. 426,398

Int. Cl. F15b *7/00*

U.S. Cl. 60—535 **12 Claims**



1. In a master cylinder connected to a first wheel brake system and a second wheel brake system, reservoir means for supplying said first and second wheel brake systems with fluid to be pressurized in response to a brake applying force, said reservoir means comprising:

a housing having a chamber therein, wall means for separating the chamber into a first compartment and a second compartment, each of said first and second compartments retaining a quantity of said fluid, said wall means having a well therein located at the center of gravity of said housing;

channel means located in the first compartment and the second compartment for directing the fluid contained therein into said well;

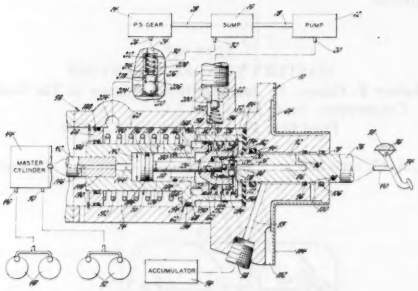
ledge means associated with said channel means and located at the center of gravity of each of said first and second compartments, said ledge means preventing a fixed quantity of fluid from entering said well when said master cylinder is rotated about said center of gravity to assure sufficient fluid is present in the master cylinder to supply at least one of said first and second wheel brake systems; and

wing walls extending from said ledge means to the wall means for preventing said fluid from entering the channel after the master cylinder has rotated about its center of gravity through an angle whose tangent is equal to the height of the ledge divided by the distance between the center of gravity of the housing and one of the first and second compartments.

3,879,948
HYDRAULIC BOOSTER

Donald M. Flory, Arcanum, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 12, 1974, Ser. No. 478,685
Int. Cl. F15b 7/00
U.S. Cl. 60—548 3 Claims



2. A hydraulic booster assembly having an input member and an output member and a power piston reciprocably mounted in a cylinder bore with a power chamber at one end thereof;

an open center valve assembly for controlling the pressure in the power chamber actuating the power piston, said valve assembly including a first valve member reciprocably mounted on said power piston and urged in a relative valve opening direction by a spring and having an effective differential area responsive to actuating pressure in said power chamber urging the first valve member toward a relative valve closing direction, and a second valve member reciprocably mounted for limited axial movement on said input member and positioned in valving relation with said first valve member and urged against a stop on said input member in a relative valve closing direction by another spring and also by actuating pressure in the power chamber;

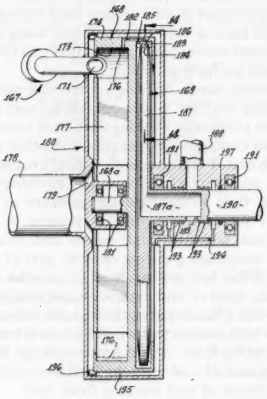
a balance piston reciprocably received in cylinder bore formed in said power piston and secured to said input member and having one side exposed to atmospheric pressure and the other side exposed to hydraulic fluid pressure downstream of said open center valve assembly with the differential pressure acting thereon to balance said input member and said second valve member against pressure changes occurring in the hydraulic actuating fluid downstream of said valve members;

and accumulator charge and release valve means responsive to hydraulic fluid pressure upstream of said valve members so as to open when that pressure exceeds the pressure charge of an accumulator connected therewith, said valve means being positioned in relation to said second valve member so that movement of said second valve member, in opposition to the spring acting thereon and in response to closure of said valve members followed by further brake apply movement of said input member, opens said valve means to admit accumulator pressure upstream of said valve members to actuate said power piston by introducing accumulator pressure into said power chamber.

3,879,949
TWO-PHASE ENGINE

Lance G. Hays, La Crescenta, and David G. Elliott, La Canada, both of Calif., assignors to Biphase Engines, Inc., La Crescenta, Calif.

Continuation-in-part of Ser. No. 310,210, Nov. 29, 1972, abandoned. This application Dec. 14, 1973, Ser. No. 424,758
Int. Cl. F01k 25/06
U.S. Cl. 60—649 18 Claims



1. In a two-phase power source, the combination comprising

a. a wheel providing a moving peripheral surface,

b. a nozzle having an outlet directed to discharge a two-phase jet for tangential impingement on said surface to freely rotate the wheel, the nozzle having means to subdivide flow therein,

c. means to supply a heated first fluid in liquid state to the nozzle for subdivided flow therein toward said outlet and to supply a second and vaporizable fluid in liquid state to the nozzle to receive heat from the first fluid therein causing the second fluid to vaporize in the nozzle and mix with the first fluid in essentially liquid state to produce said discharging jet,

d. said surface enabling separation of the fluid gas and liquid phases with low friction, transforming the flow momentum from a low value at the nozzle exit to a high value in the liquid phase,

e. means to capture first fluid which has separated from the second fluid and has acted to impart rotation to the wheel, with essentially no power transfer to the wheel,

f. and means to convert the added momentum of the captured fluid to mechanical or hydraulic power.

3,879,950
SPECIAL POWER GENERATING UNIT USING COMPRESSED AIR PRODUCED BY OCEAN WAVE TOGETHER WITH SUPER-HEATED STEAM

Kiichi Yamada, No. 15-12, 1-Chome Jingumae, Tokyo, Japan

Continuation-in-part of Ser. No. 148,830, June 1, 1971, abandoned. This application Aug. 13, 1973, Ser. No. 387,715
Int. Cl. F01k 21/04; F03g 7/00
U.S. Cl. 60—698 3 Claims

1. An electric power generating unit for installation near a body of water and for generating electrical power from compressed air and steam, comprising:

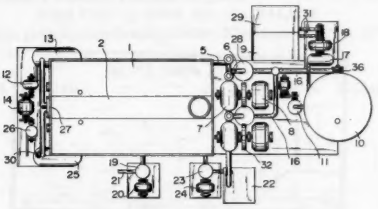
a steam generator for producing superheated steam;

a gas turbine the input end of which is connected to said steam generator for driving said turbine;

an electrical generator connected to said turbine for generating electrical power from the rotational mechanical output of said turbine;

an electrically powered first compressor for compressing air using surplus electrical energy from said electrical generator;

second means for compressing air and means for rigidly supporting said second compressing means above the surface of a body of water, said second means adapted to



be mechanically actuated by wave energy from waves in the surface of said body of water;

a tank for storing compressed air connected to the outputs of said first and second compressors;

pressure regulating means associated with said tank for controlling the pressure of compressed air within said tank at a desired level; and

an injection nozzle connecting both said steam generator and said compressed air storage tank to said gas turbine for driving said turbine by steam and/or compressed air.

3,879,951

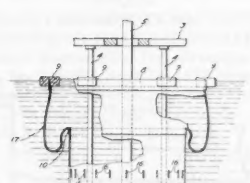
UNDERWATER DRILLING POLLUTION CONTROL CURTAIN

Charley Mack Mason, Denton, Tex., assignor to Sun Oil Company, Dallas, Tex.

Filed June 25, 1973, Ser. No. 373,580

Int. Cl. E02b *17/00, 15/04*

U.S. Cl. 61—1 R **4 Claims**



1. Apparatus for production of liquids lighter than water and immiscible therewith through offshore wells which comprises

a. a conduit for conveying said liquids from beneath the ground through a body of water to a point above the surface of the water,

b. a float enclosing an area surrounding said conduit on the surface of the water,

c. a curtain extending from said float to a point essentially above the floor of the body of water thereby defining a passageway and enclosing a volume surrounding said conduit beneath the surface of the water, said volume being in fluid communication with the water surrounding said curtain via said passageway thereby equaling inside and outside pressure, said curtain further comprising a flexible upper portion and a lower portion,

d. a support member surrounding said conduit at a fixed level,

e. a flexible upper portion of said curtain which extends from said float to said support member whereby the float can vary in vertical location with respect to the support member as the surface level of the body of water changes,

f. a lower portion of said curtain extending downwardly from said support member to a point above the floor of said body of water, the cross-sectional area defined by said float being different than the cross-sectional area defined by said member,

g. a plurality of inwardly opening slots positioned in the walls of said lower portion to allow water from outside the curtain to flow into the curtain and thereby be in fluid communication with water flowing through the passageway at the bottom of said curtain thereby equaling inside and outside pressure and

h. means for anchoring the lower end of said curtain to the sea floor to maintain its vertical position whereby liquid leaking from said conduit into said body of water rises through said volume and collects at the surface of the water in said area in a body of said liquid confined by said float.

3,879,952

PRESSURE RESISTANT CAISSON

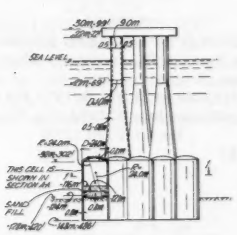
Olav Mo, Groensundveien 94, 1360-Nesbru, Norway

Filed Apr. 23, 1973, Ser. No. 353,538

Claims priority, application Norway, May 2, 1972, 1541/72; Dec. 5, 1972, 4471/72

Int. Cl. E02d *27/38;* **B65g** *5/00*

U.S. Cl. 61—46.5 **8 Claims**



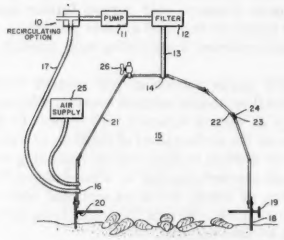
1. A monolithic offshore platform comprising: a heavy sub-structure which is heavier than the rest of the platform, the sub-structure being formed by a plurality of rigidly interconnected, vertical elongated cells; and comprising six cylindrical cells connected monolithically at their contact points with centers on a circle with radius equal to the outer diameter of the cells and twelve cylindrical cells of equal size placed outside the six cells and also connected monolithically at their contact points; a superstructure having a cross-sectional area which is exposed to wave action which area is considerably less than the cross-sectional area of the sub-structure; the superstructure being formed by at least three vertical elongated cells, each of which having an outer and inner wall at least a portion of which are conical with a larger lower diameter and a smaller upper diameter; and a deck structure supported by the superstructure; none of said parts of the platform being moveable in relation to each other.

3,879,953

DEVICE FOR UNDERWATER OBSERVATION

James Freeman Clark, Sunderland River Rd., Arlington, Vt. 05250

Filed May 22, 1974, Ser. No. 472,402
Int. Cl. B63c *11/00, 11/48*
U.S. Cl. 61—63 14 Claims



9. In the oceanic and riverine environments, a device for permitting underwater objects to be clearly observed in situ even in turbid water comprising:

enclosure means for watertightly enclosing at least a portion of an underwater object which is to be observed, said enclosure means being submerged in the watery environment, the material of which the enclosure is made being transparent; and

water-clearing means for removing turbid water from said enclosure and replacing it with clear water,

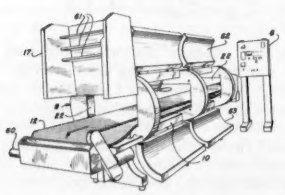
said water clearing means including, in series a hose fitting mounted on said enclosure, an excurrent hose connected to said hose fitting, a pump connected to said excurrent hose, a filter connected to said pump, an incurrent hose connected to said filter and a second hose fitting mounted on said enclosure and connected to said incurrent hose, whereby the environmental water is pumped out of said enclosure through said filter, is cleaned by said filter and then is pumped back into said enclosure as clear water.

3,879,954

METHOD OF CHILLING PRODUCTS

Lyle L. Cann, Peotone, Ill., assignor to Chemetron Corporation, Chicago, Ill.

Division of Ser. No. 331,124, Feb. 9, 1973, Pat. No. 3,841,109. This application June 3, 1974, Ser. No. 475,410
Int. Cl. F25d *13/06*
U.S. Cl. 62—63 4 Claims



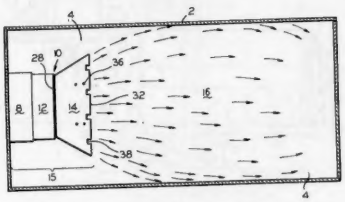
1. The method of reducing the temperature of a product comprising the steps of passing the product on a conveyor through a housing from the housing inlet to the housing outlet, directing a cold gas in the form of a stream at the product, said stream having a velocity of at least about 500 feet per minute, dividing the stream into two currents, guiding each current along a curved path within said housing, and combining said two currents into a stream for repeated direction at the product.

3,879,955

DUCTLESS AIR DISTRIBUTION SYSTEM

Donald J. Dostal, Chicago, and Ronald W. Dostal, Hinsdale, both of Ill., assignors to Dostal Enterprises, Inc., Chicago, Ill.

Filed Apr. 4, 1974, Ser. No. 457,990
Int. Cl. F25d *17/06*
U.S. Cl. 62—89 9 Claims



1. A device for circulating air cooled in an air conditioning unit of a refrigerated vehicle that is adapted for cooperation with one surface of the vehicle to propel the air along that one surface for communication with the entire interior of the vehicle comprising:

a housing adapted for mounting in the vehicle having an inlet orifice proximately located to cooperate with said air conditioning unit; and

an exit orifice with a plurality of vanes which cooperate with said housing to distribute the air along one surface;

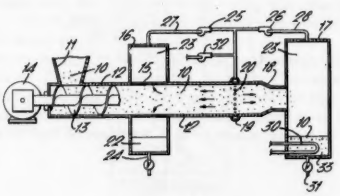
whereby cooled air flowing along said surface is caused to circulate through all portions of the vehicle's interior without the aid of a duct.

3,879,956

ICE CRYSTAL WASH

Neophytos Ganiaris, 3671 Hudson Manor Ter., Riverdale, N.Y. 10463

Filed Apr. 30, 1973, Ser. No. 355,691
Claims priority, application United Kingdom, May 1, 1972, 020159/72
Int. Cl. B01d *9/04*
U.S. Cl. 62—123 9 Claims



1. Apparatus for washing ice crystals formed by direct contact with a refrigerant comprising, in combination, a conduit having an entrance end, an intermediate portion containing fine passages therethrough, and an exit end; means forcing a slurry of ice crystals into the entrance end of said conduit past said intermediate portion to pass from said exit end; and means introducing direct contact refrigerant into the conduit after said intermediate portion forcing the direct contact refrigerant to flow countercurrent against the slurry and to flow from the conduit with matter washed from ice crystals through the fine passages in said intermediate portion; and wherein said ice crystals are formed in a brine solution such

as sea water and with the addition of a brine tank disposed about said intermediate portion of said conduit, refrigerant and brine washed from the ice crystals separating in said brine tank.

3,879,957

REFRIGERATION INSTALLATION FOR A CONTAINER SHIP

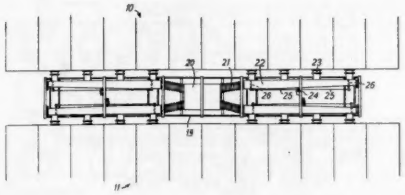
Joseph Howard Wilson, Hartley Wintney, and Arthur Victor Heighton, Ongar, both of England, assignors to Overseas Containers Limited, London, England

Filed Feb. 22, 1974, Ser. No. 444,833

Claims priority, application United Kingdom, Feb. 23, 1973, 9029/73

Int. Cl. B63b *25/26*

U.S. Cl. 62—240 **5 Claims**



1. In a container ship having a refrigeration installation for circulating cold air through containers stacked on the deck, the improvement comprising a heat exchanger for cooling the air, a number of supply ducts leading from the heat exchanger and each having supply couplings for connection to a plurality of containers, a corresponding number of return ducts each having return couplings for connection to the containers, a frame supporting the supply and return ducts to extend generally horizontally and parallel to each other, each supply and return duct including at least one section of ducting slidable on the frame in a direction transverse to the duct to advance a coupling towards a container or retract the coupling within the frame, and driving means for effecting the sliding movement of the ducting sections.

3,879,958

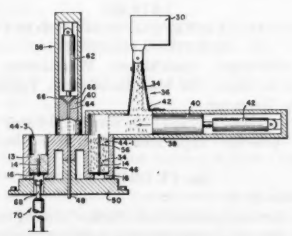
METHOD AND ICE COLUMNS SYSTEM PARTICULARLY FOR ABSORBING HEAT AND RADIATION

Crosby Field, 8029 Harbor View Ter., Brooklyn, N.Y. 11209

Division of Ser. No. 246,833, April 24, 1972, abandoned. This application June 5, 1974, Ser. No. 476,687

Int. Cl. F25c *1/14*

U.S. Cl. 62—354 **6 Claims**



1. An apparatus for producing bodies of ice containing chemicals, the combination of, congealing means for producing frozen ribbons of ice having the chemical evenly distributed therein without a variation such that the maximum concentration is not in excess of 0.002 percent greater than the minimum concentration, compacting means having an open top mold in which fragments of the ribbons of ice are deposited, and means to compact the ice therein to form solid bodies of the ice with a density of the order of 50 pounds per cubic foot, supporting means including a central rod positioned within said mold and adapted to remain in the compressed body of ice, and means to remove the body of ice from the mold.

3,879,959

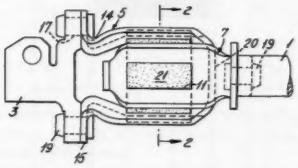
FLEXIBLE COUPLING

John William Clampett, Rayleigh, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed July 2, 1973, Ser. No. 375,577

Int. Cl. F10d *3/64*

U.S. Cl. 64—14 **8 Claims**



1. A flexible coupling for connecting a driving shaft and a driven shaft,

said coupling comprises a pair of U-shape yoke members,

said yoke members being constructed to be connected to said driving and driven shafts, respectively,

a resilient member interposed between said yoke members and constructed to provide a driving connection therebetween,

said yoke members each having apertures therein,

said resilient member having radially extending lug portions protruding through said apertures in driving engagement with said yoke members.

3,879,960

CONSTANT VELOCITY JOINT

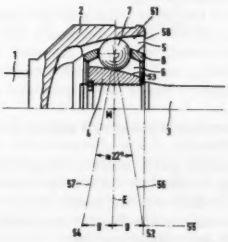
Hans-Heinrich Welschof, Obertshausen, and Erich Aucktor, Offenbach am Main, both of Germany, assignors to Lohr & Bromkamp GmbH, Offenbach am Main, Germany

Filed Oct. 25, 1973, Ser. No. 409,681

Claims priority, application Germany, Oct. 27, 1972, 2252827

Int. Cl. F16d *3/30*

U.S. Cl. 64—21 **7 Claims**



1. A constant velocity joint for torque transmission comprising

an inner joint member and an outer joint member having grooves therein arranged in pairs in meridian planes and with said grooves having surfaces extending without un-

dercutting in the longitudinal direction and forming a jaw-shaped opening in the longitudinal direction, surfaces on said inner and outer joint members, and having windows in said cage for guiding said balls.

3,879,961

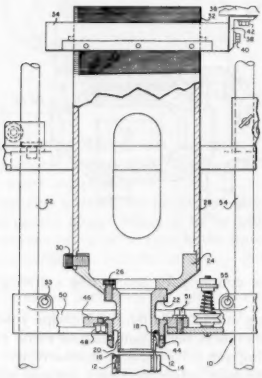
KNITTING MACHINES INCLUDING ROTATABLE HOLD DOWN RING

John Greczin, 6347 Mershon St., Philadelphia, Pa. 19149

Filed Feb. 20, 1973, Ser. No. 333,969

Int. Cl. D04b *9/100*

U.S. Cl. 66—9 A **2 Claims**



1. In a circular knitting machine of the type having stationary portions and rotary portions and having a stationary needle bed and knitting needles vertically reciprocal relative to the needle bed, the combination of

A. a yarn guide holder positioned above the needle bed,

1. said yarn guide holder being secured to the rotary portions of the machine and having rotary motion relative to the needle bed,

2. said yarn guide holder upwardly carrying a pair of support posts,

a. said support posts projecting vertically upwardly from the yarn guide holder,

3. said yarn guide holder being shaped in the configuration of a flat annular segment defining a central opening,

a. said annular segment having a bottom, the said bottom being provided with a circular recess adjacent the central opening;

B. a hold down ring associated with the yarn guide holder and secured thereto above the needle bed,

1. said hold down ring being provided with an upper support flange and a concentric needle guide portion,

a. said support flange being provided with a pair of openings,

b. said openings aligning with and receiving thereon the support posts,

c. said needle guide portion being contacted by the knitting needles as they reciprocate to an upper position relative to the needle bed,

d. said needle guide portion projecting downwardly through the central opening,

e. said needle guide portion being rotated by the rotary portions of the knitting machine to expose differing areas of the needle guide portion to needle contact; and

C. a yarn guide of generally hollow cylindrical construction in contact with the yarn guide holder,

1. said yarn guide overfitting the said needle guide portion of the hold down ring,

2. said yarn guide terminating upwardly in a peripheral flange,

a. the said flange being positioned within the circular recess.

3,879,962

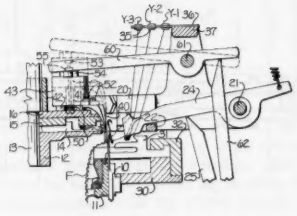
FABRIC HOLD-DOWN BLADE FOR CIRCULAR HOSIERY KNITTING MACHINES

Peter A. Mahler, High Point, N.C., assignor to H. E. Crawford Co., Inc., Kernersville, N.C.

Filed Mar. 25, 1974, Ser. No. 454,330

Int. Cl. D04b *9/06, 9/12*

U.S. Cl. 66—19 **6 Claims**



1. In a circular hosiery knitting machine including a circle of cylinder needles, a dial positioned within said circle of cylinder needles, dial needles supported for radial movement in said dial, a latch ring surrounding said circle of cylinder needles, a throat plate positioned in said latch ring, and yarn feed means positioned for movement into and out of operative position in said throat plate for selectively feeding yarn to said dial and cylinder needles to form fabric thereon; the combination therewith of fabric hold-down means comprising

a. a fabric hold-down blade positioned opposite said throat plate and between said dial and said circle of cylinder needles,

b. support means positioned on said dial and supporting said blade for vertical movement between the outer periphery of said dial and said circle of cylinder needles, and

c. pattern control means for lowering said support means and said fabric hold-down blade to engage the fabric when the fabric is being formed on said cylinder needles only and to raise said support means and said fabric hold-down blade upwardly so that the lower end of said fabric hold-down blade is above the level of said dial needles when the fabric is being formed on said dial and cylinder needles.

3,879,963

ELECTRICAL PATTERNING SYSTEM FOR CIRCULAR KNITTING MACHINES

Gerhard Grözinger, Spaichingen, Wurttenberg, Germany, assignor to Mayer Cie Maschinenfabrik, Tailfinger, Wurttemberg, Germany

Filed Dec. 2, 1970, Ser. No. 94,365

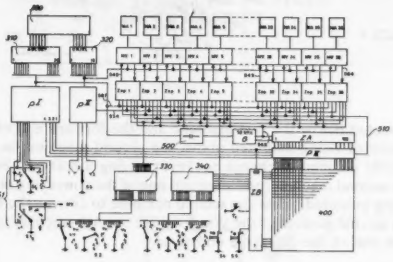
Claims priority, application Germany, Dec. 5, 1969, 1961102

Int. Cl. D04b *15/78*

U.S. Cl. 66—50 R **12 Claims**

1. A patterning system for a circular knitting machine having a plurality of knitting stations, knitting needles, and electrically operated actuators for directly or indirectly controlling the needles, in combination, a permanent patterning store including a stationary switch matrix having information locations arranged in rows and columns representing courses and wales of knitted fabric, each information location having *n* different selectable states, the states representing different

pattern characteristics; means for generating coded signals for controlling knitting at the knitting stations; counting means controlled by said means for generating coded signals for scanning said matrix to produce patterning signals; program logic switch means connected to said matrix for passing said patterning signals from said matrix in dependence upon the pattern characteristic represented by said patterning signals; main program switch means connected to said program logic means and controlled by said means for generating coded signals for coordinating said patterning signals from said matrix with the individual knitting stations; at least one buffer store for each knitting station, each buffer store being connected to said program switch means to receive therefrom said patterning signals, and groups of needle actuators connected to each of said buffer stores for controlling the knitting at the respective knitting stations, wherein said program logic switch



means has a logic circuit means for each respective column of said matrix, each logic circuit means having *n* AND gates, said main program switch means having *n* outputs of which each is connected to an input of a respective one of said AND gates, OR gate means, the inputs of said OR gate means being connected to the outputs of said AND gates, and an output AND gate having at least two inputs one of which is connected to the output of said OR gate means, and further wherein said counting means includes a wale counter having a plurality of counting states each associated with a respective column of said matrix, and each one of said counting stages being connected to the other input of the output AND gate of the respective logic circuit means, and further including a common conductor connecting the outputs of all of said logic circuit means to said buffer stores for transmitting patterning signals to the latter.

3,879,964

METHOD AND APPARATUS FOR MAKING A NOVEL FABRIC

Antonio Blasi Pascual, Conde de Salvatierra, 49, Tarrasa (Barcelona), Spain

Filed July 18, 1972, Ser. No. 273,018

Claims priority, application Switzerland, July 19, 1971, 010598/71

Int. Cl. D04b *23/02*

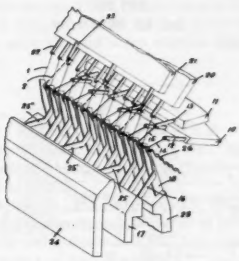
U.S. Cl. 66—87 **5 Claims**

1. In a warp knitting machine comprising at least one guide bar which feed and guide warp threads which are to form the warp knit fabric and at least one knitting machine needle bar, the arrangement comprising:

at least a first and second complementary guide bar said bars synchronized with the guides feeding the warp threads, for feeding respectively a first and a second series of longitudinal warp-like threads and for guiding said longitudinal threads and inserting them between the warp-like threads which form the warp knit fabric;

at least one complementary needle bar having needles similar to knitting machine needles, synchronized with the needles of the machine and operatively positioned to be inserted between the conventional needles of the machine;

complementary operating means coupled to said complementary needle bar for separating the needles thereof from the conventional needles of the machine, moving said complementary needles transversely to the conventional needles of the machine and reinserting said complementary needles at a new location between said conventional needles; and



complementary operating means operatively positioned for moving said complementary first and second guide bars in such a manner that the threads of said second series are wound around the respective threads of said first series.

3,879,965

APPARATUS FOR VAPOR TREATING TEXTILE MATERIAL

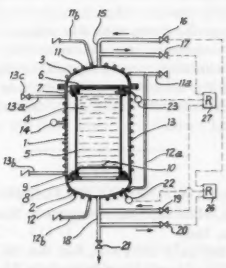
Gerard Champel, and Francois Ody, both of Montelimar, France, assignors to Etablissements Joseph Lagarde, Montelimar, France

Division of Ser. No. 217,847, Jan. 14, 1972, Pat. No. 3,762,868. This application Mar. 9, 1973, Ser. No. 339,929

Claims priority, application France, Jan. 18, 1971, 71.01460

Int. Cl. D06c *1/04*

U.S. Cl. 68—5 C **9 Claims**



1. Apparatus for vapor treating textile materials by passing vapor through said material, which apparatus comprises a chamber, and means for positioning the textile material within said chamber so as to prevent any direct communication between two parts of said chamber, each of which parts is provided with both a vapor inlet and a vapor outlet duct, each duct being controlled by an individual valve, at least one part being provided with a pressure responsive device preset to open the vapor inlet valve for the other part when the pressure in said one part is low and to close said vapor inlet valve for said other part and open the vapor outlet valve for said one part when the pressure in said one part substantially equals the pressure in the other part.

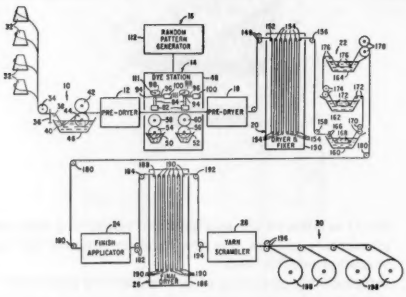
3,879,966
CONTINUOUS YARN DYEING MACHINES

Daniel L. Worth, Chattanooga, Tenn., and Phillip F. Eiland, Reading, Pa., assignors to The Singer Company, New York, N.Y.

Division of Ser. No. 285,409, Aug. 31, 1972, Pat. No. 3,800,565, which is a continuation of Ser. No. 49,064, June 23, 1970, abandoned. This application Sept. 20, 1973, Ser. No. 399,210

Int. Cl. B05c *1/08*

U.S. Cl. 68—203 **4 Claims**



1. In a continuous dyeing machine for dyeing yarns including means for feeding said yarns through said machine, dye printing means including a plurality of dye printing members and actuation means associated with each said dye printing member for initiating movement of its dye printing member into an operative dye printing position, random pattern means for generating random pattern control signals including a first pattern media having transparent portions and opaque portions, a second pattern media having transparent portions and opaque portions, a source of light for illuminating the transparent portions of each pattern media, light responsive means for generating a voltage signal when impinged by light, each said media being positioned between the source of light and the light responsive means, means for moving the first pattern media relative to the second pattern media at a fixed relationship, and means for comparing the voltage signals generated by the light responsive means associated with the pattern media for generating control signals having a substantially infinite repeat for selectively activating said actuation means such that a substantially completely random pattern will be printed on said yarns.

3,879,967
INSTALLATION FOR THE DE-FLESHING OF SKINS

Silvio Repetto, Modena, Italy, assignor to S.p.A. Luigi Rizzi & C., Modena, Italy

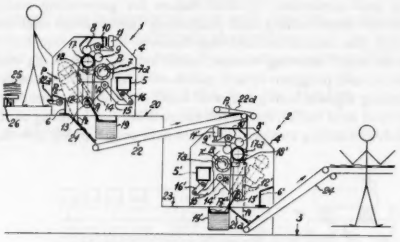
Filed July 27, 1973, Ser. No. 383,143

Claims priority, application Italy, July 28, 1972, 27590/72

Int. Cl. C14b *1/06*

U.S. Cl. 69—42 **6 Claims**

1. In an installation for the continuous de-fleshing of skins, including two horizontally spaced de-fleshing machines arranged so that a first one of the machines is a mirror image of a second one of the machines relative to a vertical reference line intermediate the machines, each machine comprising a de-fleshing means and feed means for feeding a trailing first portion of a skin upwardly past the de-fleshing means for de-fleshing the first portion while simultaneously downwardly discharging a leading second portion of the skin from the machine, and transfer conveyor means for conveying the skin from the first to the second machine, the improvement of the transfer conveyor means consisting essentially of a single, stationarily mounted, unidirectionally moving conveyor having a rear end and a forward end, a stationarily mounted conveying means mounted on each machine for receiving and conveying the leading second portion of the skin from the machine, a first one of the conveying means being mounted below the first machine to convey the leading second portion of the skin from the first machine to the rear end of the unidirectionally moving conveyor, the rear conveyor end being



mounted below the first machine and the forward end of the conveyor being mounted above the second machine, an upwardly inclined discharge conveyor having a rear end below the second machine, and a second one of the conveying means being mounted below the second machine to convey the leading second portion of the skin from the second machine to the rear end of the discharge conveyor.

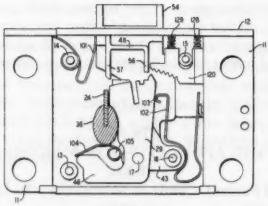
3,879,968
KEY OPERATED LOCK

Paul Edward Schweizer, Marion, Ind.; Edwin Frank Toepfer, Waukesha, Wis., and Merville Lee Warnock, Marion, Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 31, 1974, Ser. No. 438,290

Int. Cl. E05b *21/00*

U.S. Cl. 70—81 **2 Claims**



1. A key operated lock including

a bolt including a fence portion,

a plurality of moveable levers each having a curved edge portion and a gate formed therein for accommodating said fence portion when said levers are properly positioned, so as to allow said bolt to assume its unlocked position,

a cam arranged to move said fence portion of said bolt from its locked position toward said curved edge portion of said levers and into said gate when properly positioned, and

means for preventing movement of said levers when said fence portion of said bolt is moved toward contact with said curved edge portion of said levers by activation of said cam,

wherein said levers each include a pointed tip protruding from said curved edge portion,

said movement preventing means includes a multitoothed surface adapted to engage said pointed tip,

said lock further includes at least one spring member adapted to bias said movement preventing means including said multitoothed surface toward said pointed tip, and said movement preventing means further includes a flange portion adapted for engagement with a portion of said bolt when said bolt is in its fully locked position so as to maintain said multitoothed surface in spaced relation from said pointed tip, and adapted for disengagement from said portion of said bolt when said bolt is in its fully unlocked position.

3,879,969

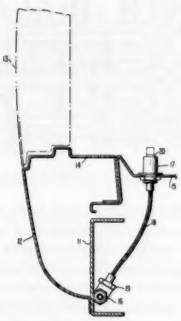
FUEL LINE LOCK FOR A MOTOR VEHICLE

Leander G. Pynn, Pynn Real Estate, Meredith, N.H. 03253

Filed Nov. 15, 1973, Ser. No. 416,149

Int. Cl. B60r *25/04*

U.S. Cl. 70—242 **1 Claim**



1. A fuel line lock for a motor vehicle comprising

a. a fuel line valve adapted to be to the fuel line of the motor vehicle, said valve comprising,

i. a valve body, said valve body comprising a standard fuel line tee-fitting with a fuel inlet, a fuel outlet, and a branch outlet with cylindrical fuel passageways defined therebetween, said branch outlet providing a reciprocating passageway disposed perpendicularly and communicating with the passageway defined between said inlet and outlet;

ii. a valve member for reciprocating within said branch passageway, said valve member being cylindrical and sized to the interior diameter of the fuel passageway defined within said tee-fitting, said valve member having a first closed and second open position, said valve member completely closing said fuel passageway when reciprocated to its first position, said valve member also defining an angular flange which reciprocates within the branch outlet of said tee-fitting;

iii. a helically coiled spring mounted within said branch outlet and surrounding said valve body to engage said angular flange and thereby urge said valve member to its second open position;

b. actuating means for said fuel line valve, said means comprising a flexible reciprocating member with a flexible armored cable housing, said housing being fixably attached to said valve body through a terminal flange which is secured to said standard tee-fitting with a fuel line nut, said flexible reciprocating member being fixably attached to said valve member;

c. lock means for mounting within said motor vehicle, lock means comprising

i. a housing member for securing said lock to said motor vehicle, said housing member defining a reciprocating passageway and at least one indent;

ii. a key operated reciprocating member mounted for reciprocation within said reciprocating passageway between a first depressed position and a second released position, said lock means being fixably attached to said flexible reciprocating member to reciprocate said valve member to its first closed position as said reciprocating member is depressed;

iii. engagement means mounted within said reciprocating means for engaging said indent when said reciprocating means is reciprocated to its first position, said means thereby securing said valve member in its first closed position.

3,879,970

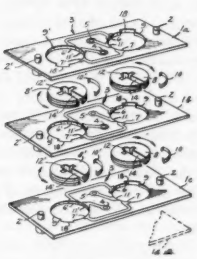
FLUID OPERATED LOCK

Robert Stephen Salzman, 27 Holbrook Dr., Stamford, Conn. 06906, and Gerald Martin Goldman, Knollwood Extension, Elmsford, N.Y. 10523

Division of Ser. No. 281,649, Aug. 18, 1972, Pat. No. 3,822,368, which is a continuation-in-part of Ser. No. 244,678, April 17, 1972, Pat. No. 3,805,121, which is a continuation-in-part of Ser. No. 199,883, Nov. 18, 1971, Pat. No. 3,782,148. This application Apr. 19, 1974, Ser. No. 462,343

Int. Cl. E05b *47/04, 31/02*

U.S. Cl. 70—275 **15 Claims**



1. A fluid lock construction, comprising a plurality of ganged board-like elements, each respectively containing a portion of a fluid circuit, said elements forming with the other elements in said ganged construction a connective fluid circuit path, means supported by said elements for altering the continuity of said connective fluid circuit path, and locking means operatively connected to said fluid circuit and responsive to the continuity of the fluid path.

3,879,971

LOCK KEY EJECTOR

Louis Messera, and Dominic Messera, both of 28 Spring St., Oyster Bay, N.Y. 11771

Continuation-in-part of Ser. No. 356,787, May 2, 1973, Pat. No. 3,826,116. This application Mar. 18, 1974, Ser. No. 452,367

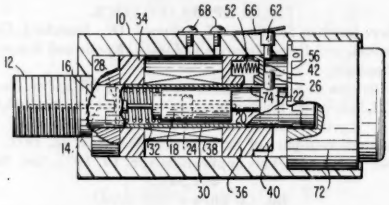
Int. Cl. E05b *17/00*

U.S. Cl. 70—388 **4 Claims**

1. In a key operated lock having means to eject the key comprising an ignition means, movable by means of the key, for opening and closing sets of electrical contacts in response to the position of said ignition means, said ignition means being adapted to be electrically connected to a source of electrical potential and including a tubular core member, push-rod means, including a push-rod disposed in a position to come into contact with the key for moving in a first axial direction upon insertion of the key and moving in a second, opposite direction to eject said key, said push-rod extending through said core member, and a first plunger slidably disposed within said core and fixedly attached to said push-rod;

and a key ejection means for ejecting the key from said ignition means in response to the motion of said ignition means, said key ejection means having a magnetic coil wound around said core, a second plunger means slidably disposed within said core for moving axially in the said second direction within said core in response to the attraction of said magnetic coil, said push-rod extending through and axially disposable within said second plunger and electrical means for energizing said coil in response to the motion of said ignition means, wherein said first plunger is located within the path of travel of said second plunger means, the improvement wherein:

said second plunger includes a counterbored portion facing the key end of the lock; and



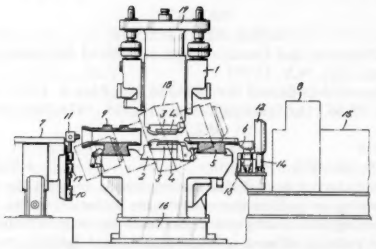
wherein the key operated lock further includes a hollow tube slidably disposed within said second plunger about said push-rod, said hollow tube having a flange fixedly positioned about the end of said hollow tube nearest the key end of the lock, said flange slidably disposed within said counterbored portion of said second plunger, and a disc fixedly connected to the opposite end of said hollow tube, said disc having a central bore in alignment with said hollow tube through which said push-rod may pass, whereby upon energization of said magnetic coil said second plunger means moves axially within said core in said second direction and engages said first plunger thereby causing the axial movement of said first plunger and said push-rod in said second direction and the ejection of the key.

3,879,972

METHOD AND APPARATUS FOR REMOVING A PLUG

Senshu Kanai; Haruo Kamimura, and Masachika Numano, all of Yokahama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1974, Ser. No. 469,564
Claims priority, application Japan, May 17, 1973, 48-54098
Int. Cl. B21b *25/06*
U.S. Cl. 72—97 **6 Claims**



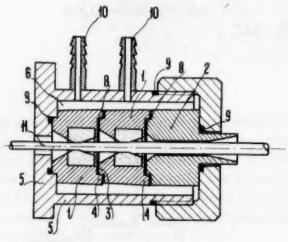
1. In a rolling mill of the type using a plug for piercing, reeling or cross-rolling a workpiece, a method of removing the plug left in the mill after completion of the rolling operation comprising the steps of advancing a nozzle for ejecting water under high pressure and a water collector into alignment with the pass line of the mill, ejecting the water against said plug for removing the same from the mill by the force applied to the plug by the ejected water and by the lubricating action of the water, and collecting the ejected water by said water collector so as to prevent splashing of the water.

3,879,973

DRAWING DEVICE WITH HYDRODYNAMIC LUBRICATION

Adam Godyn; Tadeusz Prajsnar; Jozef Rulinski; Leopold Sikora; Roman Wusatowski, and Edward Zglobicki, all of Zabrze, Poland, assignors to Instytut Metalurgii Zelaza im. St. Staszica, Gliwice, Poland

Filed May 30, 1973, Ser. No. 365,289
Claims priority, application Poland, Aug. 1, 1972, 155866
Int. Cl. B21c *9/00, 3/00*
U.S. Cl. 72—37 **2 Claims**



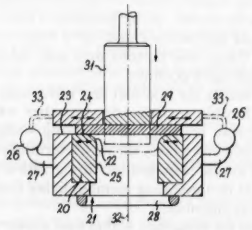
1. Apparatus for drawing wires, bars, and tubes comprising a housing containing and surrounding a pressure sleeve and drawing dies in tandem alignment with labyrinth undercuts; gaskets sealing lubricant chambers between said drawing dies and (a) said pressure sleeve; an internal chamber for water cooling of said drawing dies and said pressure sleeve wherein labyrinth sealing undercuts are the only means for centering the tandem alignment of said drawing dies and said pressure sleeve, and wherein said internal chamber extends the axial length of said drawing dies and said pressure sleeve and is formed by internal walls of said housing, by external cylindrical surfaces of said drawing dies, and by the external cylindrical surface of said pressure sleeve.

3,879,974

FORMING OF MATERIALS

David Colin Biddell, Birmingham; Dennis Hugh Sansome, Sutton Coldfield; Colin Edward Winsper, Walsall, and John Radley Young, Monks Eleigh, all of England, assignors to National Research Development Corporation, London, England

Filed Feb. 9, 1973, Ser. No. 331,099
Int. Cl. B21d *24/04*
U.S. Cl. 72—56 **8 Claims**



1. Apparatus for forming shaped products from blanks comprising:

a die defining a die cavity into which a blank is forced during forming, said die cavity defining an axis about which the product forms,

a support structure defining a support surface upstream of said die,

means for drawing the blank over said support surface during forming,

means for vibrating said structure in a radial resonant mode during drawing, wherein said support surface vibrates so that each point of said surface moves tangentially to said surface, and generally in a line directed towards said axis, and

a blank holder, said blank holder being located in confronting relation to said support surface, wherein said blank is sandwiched between said support surface and said blank holder as it is drawn towards said die, said holder being vibrated by induced vibration from said vibrating support structure in a radial mode about said axis, wherein each point on the surface of said holder in contact with said blank is in vibratory movement in a direction tangential to said surface and along a line directed generally towards said axis.

3,879,975

MACHINE FOR PRODUCING COIL SPRINGS

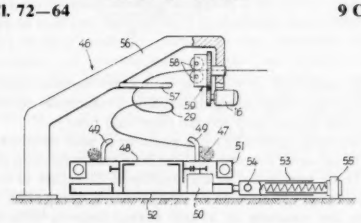
Joachim Huhnen, Blankensteinstr. 24, D-7141 Steinheim, Germany

Filed Feb. 27, 1973, Ser. No. 336,388

Claims priority, application Germany, Feb. 28, 1972, 2209340

Int. Cl. B21b *15/02*

U.S. Cl. 72—64 **9 Claims**



1. Winding machine for producing coil springs from spring wire, comprising at least one winding pin for guiding and plastically deforming the on-running spring wire, at least a first pair of rollers for pushing forward the spring wire in a straight line to the said winding pin, said first pair of rollers clamping the spring wire for twisting purposes thereby lockingly holding it against rotation relative to the pair of rollers, and means for rotating the first pair of rollers about the axis of the portion of wire located in the region of said first pair of rollers.

3,879,976

STARTER SLIDE AND BLADE ASSEMBLY FOR THREAD ROLLER

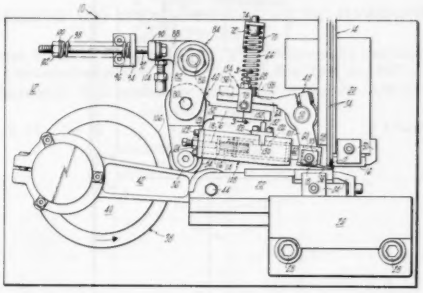
Robert D. Morton, West Hartford, Conn., assignor to The Hartford Special Machinery Company, Simsburg, Conn.

Filed Dec. 14, 1973, Ser. No. 424,870

Int. Cl. B21h *3/06, 9/02*

U.S. Cl. 72—90 **8 Claims**

1. A starter mechanism usable in a thread rolling machine for high speed feeding of work blanks from a feed chute to a work station between starting ends of a pair of thread rolling dies and comprising a stationary frame, a starter blade movable toward and away from a starting position at the work station, the starter blade effecting both wedging of a work blank between the starting ends of the dies and gating the feed chute, a slide supporting the starter blade for rectilinear reciprocation throughout its full range of movement, a one-way drive lever including a slide actuator engageable with the slide, the one-way drive lever mounted for pivotal movement on the frame for moving the slide actuator in opposite angular directions toward and away from a terminal position of the slide actuator, the slide actuator positively engaging and driving the slide in one linear direction to retract the starter blade away from its starting position responsive to movement of the slide actuator in one angular direction away from its terminal position, biasing means acting directly on the slide, the biasing means urging the slide in the opposite linear direction for blank feeding to cause the slide to follow a return movement of the drive lever and its slide actuator in the opposite angular direction while exerting a sole starting force on the starter blade in returning it to its starting position, the slide actuator upon its return in said opposite angular direction to said terminal position serving to establish a positive stop for the slide and, accordingly, to establish the starting position of the



starter blade, a cam rotatably mounted on the frame, a cam follower pivotally mounted on the frame, the cam follower having one end engageable with a contoured cam surface of the cam and an angularly offset elongated adjustment arm, the drive lever having an enlongated adjustment arm disposed adjacent the adjustment arm of the cam follower, a pivot pin being disposed between the adjustment arms maintaining them in spaced apart relation, a drive return spring for urging said one end of the cam follower into engagement with the cam and biasing the one-way drive lever in said opposite angular direction, and adjustment means being mounted on one of the adjustment arms for selectively positioning the pivot pin along the length of said one arm for varying the angular displacement of the drive lever to establish a desired stroke length of the starter blade from its starting position without varying the cam contour and without affecting the starting position of the starter blade as established by the terminal position of the drive lever slide actuator.

3,879,977

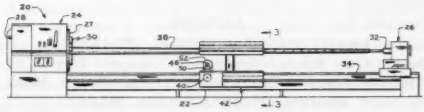
TAPERED POLE AND METHOD AND APPARATUS FOR PRODUCING SAME

Ford B. Cauffiel, 4940 Homerdale Ave., Toledo, Ohio 43623

Division of Ser. No. 212,228, Dec. 27, 1971, Pat. No. 3,771,978. This application Aug. 28, 1973, Ser. No. 392,259

Int. Cl. B21f *35/02*

U.S. Cl. 72—137 **17 Claims**



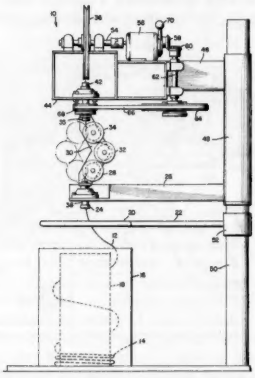
1. Apparatus for producing a tapered pole comprising an elongate, tapered mandrel, means for rotating said mandrel, an elongate strip, means for directing the elongate strip onto said mandrel in a pseudo-helical manner as the mandrel ro-

tates, with edges of the strip lying in contiguous relationship, means for applying pressure to both sides of said strip for placing under tension the portion of the strip between said directing means and said mandrel, with the tension being substantially constant over the width of the strip.

3,879,978
WIRE UNREELING SYSTEM

Marvin E. Harris, Jr., Florence, Ala., assignor to Reynolds Metals Company, Richmond, Va.

Filed Jan. 7, 1974, Ser. No. 431,084
Int. Cl. B21f *1/02*
U.S. Cl. 72—183 **3 Claims**



1. Apparatus for unreeling wire from a coil in a direction along an extension of the axis of the coil which comprises:

a. a first annular constriction through which the wire is initially withdrawn from the coil,

b. rotatable means around which the wire is entrained in frictional engagement before it is withdrawn under tension,

c. a second annular constriction through which said wire passes after said first annular constriction but prior to being entrained on said rotatable means,

d. untwisting means for untwisting the wire located between said first and second annular constrictions,

e. and motor drive means for positively driving said untwisting means regardless of the tension on said wire,

f. said untwisting means comprising:

1. several rollers about which said wire is entrained to travel in a sinuous path so that said wire is bent first in one direction and then the other,

2. a common support on which said rollers are journaled with said common support being driven by said motor drive means and swung about an axis passing between said first and second annular constrictions,

g. said motor drive means being a variable speed means with means for varying said speed independently of the rotation of said rotatable means during the operation of said apparatus.

3,879,979
FRAME MANUFACTURING APPARATUS

Osamu Arai; Kaoru Kikuchi, and Tomoyuki Ogawa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 25, 1973, Ser. No. 382,337
Claims priority, application Japan, Aug. 7, 1972, 47-78359
Int. Cl. B21d *28/00*
U.S. Cl. 72—338 **7 Claims**

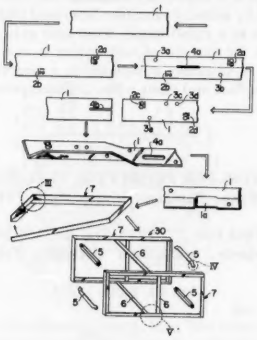
1. A method for manufacturing a planar frame comprising the steps of

forwarding a flat strip blank an optional distance, said distance being predetermined to form a planar frame from a single length of said flat strip blank,

applying a predetermined press work to a predetermined position of said strip blank forwarded by said first means by punching corner-forming slots at said position of said strip blank, said corner-forming slots being formed in the longitudinal directions of said strip blank,

controlling said first and second means by applying preset working information.

deforming said strip blank supplied from said second means into a predetermined shape by bending said strip blank along the longitudinal direction of said strip blank, said corner-forming slots being aligned along the bend formed



by said step of bending, and said corner-forming slots having a longitudinal dimension substantially equal to the width of the strip section from said bend,

fabricating corner-forming portions at said corner-forming slots by shearing the strip section from said bend, said shearing step being performed in the widthwise direction of the strip blank at one end of each of said corner-forming slots, and by raising the resulting lip at said corner-forming slots and the sheared portion of said strip section to such a degree that said lip can be superimposed on the adjoining portion of said strip blank upon fabrication of said corner-forming portions, and

bending said strip blank at said corner-forming portions and connecting said lip with said adjacent portions of said strip blank to form the planar frame.

3,879,980
HOLE ENLARGING SYSTEM

John O. King, Jr., 3990 N. Ivy Rd., Atlanta, Ga.

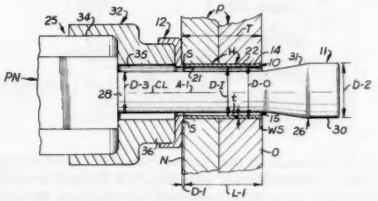
Continuation-in-part of Ser. No. 324,484, Jan. 17, 1973, Pat. No. 3,805,578, and a continuation-in-part of Ser. No. 324,485, Jan. 17, 1973, Pat. No. 3,835,688, which is a continuation-in-part of Ser. No. 268,478, July 3, 1972, Pat. No. 3,835,615, which is a continuation-in-part of Ser. No. 33,281, April 30, 1970, abandoned, which is a continuation-in-part of Ser. No. 711,368, March 7, 1968, abandoned. This application Apr. 22, 1974, Ser. No. 462,817
Int. Cl. B21d *41/02*
U.S. Cl. 72—393 **10 Claims**

1. A device for enlarging holes through work pieces wherein the holes have been deburred on one side thereof to form a shoulder at the holes and a working surface about the holes extending from the shoulder to the opposite side of the work pieces comprising:

a seamless and headless tubular member having an outside diameter smaller than the initial diameter of the holes through the work pieces, defining a passage therethrough and having an annular end surface generally normal to the centerline of said tubular member;

a mandrel having an outside larger and an outside smaller diameter, said larger diameter larger than the inside diameter of said tubular member and said smaller diameter smaller than the inside diameter of said tubular member; and,

a back-up member including a body defining an aperture therethrough of substantially the same diameter as the inside diameter of said tubular member and larger than said smaller diameter of said mandrel so that when said smaller diameter is inserted through said passage of said tubular member and said backup member positioned on said smaller diameter in opposition with said larger diameter across said tubular member, said larger diameter and said backup member can be forced toward each other to



cause said larger diameter to pass through said passage and said aperture to enlarge the diameter of said tubular member and the holes through said tubular member, said back-up member further including a lip about said aperture at one end thereof, said lip defining an annular support surface generally normal to the centerline of said aperture and corresponding in size and shape to said annular end surface of said tubular member, said lip further defining an outer surface complimentary to the shoulder at the holes in the work pieces so that said support surface on said lip supports said end surface of said tubular member at a prescribed location in the holes during enlargement and said outer surface enlarges the diameter at the shoulder of the work pieces as said lip is enlarged.

3,879,981

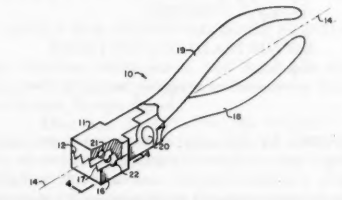
FISHLINE CONNECTOR DEVICE

Joseph E. Richards, P.O. Box 492, Antioch, Calif. 94509

Filed May 23, 1973, Ser. No. 363,309

Int. Cl. B21d *9/08*

U.S. Cl. 72—410 **3 Claims**



1. A tool for fastening lines having an upper crimping head, a lower crimping head and means for forcing said upper and lower crimping heads together to deform a crimping sleeve, the improvement comprising

means defining a plurality of first parallel grooves in said upper crimping head,

means defining a like plurality of grooves in said lower crimping head adapted to mate and engage with said first grooves,

means defining a third groove in said upper crimping head disposed generally perpendicular across said first grooves, the depth of said third groove being less than the depth of said first parallel grooves,

means defining a fourth groove in said lower crimping head disposed generally perpendicular across said second grooves, the depth of said fourth groove being less than the depth of said second parallel grooves,

said third and fourth grooves disposed opposite each other to define a channel through said first and second grooves when said upper and lower crimping heads are engaged, the width of said third and fourth grooves being less than the width of said crimping sleeve,

with said first and second grooves adapted to engage and deform the opposite sides of said crimping sleeve when said crimping sleeve is aligned with said third and fourth grooves.

3,879,982

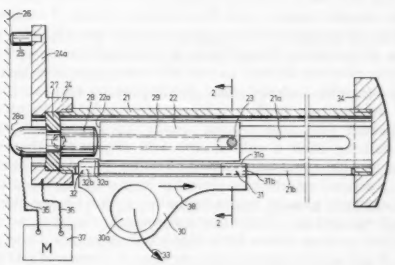
METHOD AND APPARATUS FOR TESTING HARDNESS OF SPECIMENS

Ernst Schmidt, Reiserstrasse 29, 4132 Muttenz, Switzerland

Continuation-in-part of Ser. No. 298,006, Oct. 16, 1972, abandoned. This application Mar. 8, 1974, Ser. No. 449,459

Int. Cl. G01n *3/30*

U.S. Cl. 73—12 **9 Claims**



4. A device for testing hardness of specimens, comprising an impact tool having a housing with a striking member movable therein, an impact probe held elastically in said housing in the path of movement of said striking member and being movable thereby out of said housing to contact the specimen, means for engaging said striking member to move said striking member to hit said impact probe and to move said probe to strike against the specimen, said striking member having a mass greater than or equal to the mass of said probe, electrical circuit means connected between said striking member and said probe including an electrical timer having a switching means connected to said striking member and said impact probe which are closable by a first contact of said striking member with said probe to start the timer and which are closable to stop the said timer by a following contact of said striking member with said probe upon rebound from the specimen, whereby the time indicated by said timer provides an indication of the hardness of the specimen.

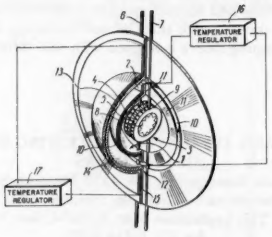
9. A hardness testing device comprising a flat plate probe, a rod connected to one side of said probe and extending upwardly therefrom, a weight having a bore therethrough engageable over said rod and being slidable upwardly and downwardly on said rod, latching means on said rod for latching said weight in a raised position above said probe and electrical chronometer means connected between said weight and said probe for measuring the time elapsed between a first contact of said probe with said weight and a subsequent contact of said probe with said weight said weight having a mass greater than or equal to the mass of said probe.

3,879,983

DIFFERENTIAL SCANNING CALORIMETER FOR THERMAL ANALYSIS OF LIQUIDS

Petr Leonidovich Privalov, Mikroraion "V," 29, kv. 38, and Valerian Valerievich Plotnikov, Mikroraion "G," 9, kv. 47, both of Pushino Moskovskoi oblasti, U.S.S.R.

Filed Apr. 11, 1973, Ser. No. 350,160
Int. Cl. G01k *17/00*; G01h *25/20*
U.S. Cl. 73—15 B 12 Claims



1. A differential scanning calorimeter for thermal analysis of liquids, comprising: an adiabatizing shell, said adiabatizing shell including two identical surfaces of revolution, each said surface of revolution incorporating a convex portion adjoining a flat annular portion, said flat annular portion of each said surface of revolution having grooves, said two identical surfaces of revolution being firmly pressed together by said flat annular portions thereof, so that said convex portions thereof define together a closed space; heating means associated with said adiabatizing shell; a temperature regulator electrically connected with said heating means associated with said adiabatizing shell a calorimetric cell disposed within said closed space; a first calorimetric chamber in said calorimetric cell; a second calorimetric chamber in said calorimetric cell; first capillary passage means for letting a liquid being investigated into and out of said first calorimetric chamber; second capillary passage means for letting a reference liquid into and out of said second calorimetric chamber; a portion of said first and second capillary passage means being defined by said grooves of said respective pressed together flat annular portions; heating means associated with said calorimetric cell; and a differential temperature responsive member encircling said first and second calorimetric chambers.

3,879,984

GAS FLOW CONTROL

John Michael Welland, 16 Valleyside, Hemel Hempstead, England

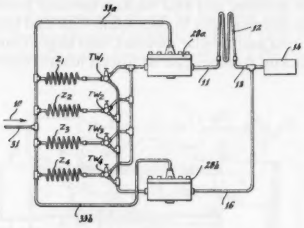
Continuation-in-part of Ser. No. 116,553, Feb. 18, 1971, abandoned. This application Mar. 15, 1973, Ser. No. 341,514
Int. Cl. G01n *31/08*
U.S. Cl. 73—23.1 5 Claims

1. In gas chromatographic apparatus in which gas at a substantially constant pressure is fed from a source via a main flow path to a chromatographic column and from the column to a detector, a system for maintaining the flow rate of gas to the detector steady for various selectable rates of flow through the column comprising:

a flow regulator in the main flow path to the column consisting of a pressure responsive valve resiliently biased to an open position against a predetermined counter biasing pressure, and flow impedance means upstream from the valve, said valve being responsive to any pressure change caused by a flow change at its downstream side by adjusting the valve opening for maintaining a constant pressure at the downstream side of the impedance means in relation to the substantially constant pressure of gas from said source and thus steadying the flow through the column for any selected flow rate;

a by-pass flow path having one end coupled into the main flow path between the downstream, low pressure, side of the impedance means and said valve and having its other end coupled into said main flow path at said detector input; and

variable impedance means in the by-pass flow path for changing the gas flow through the by-pass flow path whereby a change in the by-pass flow produces a change



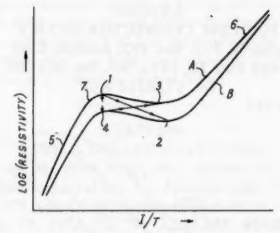
in the pressure at the downstream side of the impedance which is immediately counteracted by said pressure responsive valve means causing the opening through the pressure responsive valve to vary an amount that changes the column flow inversely the amount of the by-pass flow change so that the pressure at the downstream side of the impedance is restored to its constant value and the flow to the detector is maintained at a steady rate.

3,879,985

DETECTION AND ANALYSIS OF GASES OR VAPOURS

Christopher Gordon Maslen, 206 New Rd., Parley, Wimborne, Dorset, England

Filed July 11, 1973, Ser. No. 378,299
Claims priority, application United Kingdom, July 11, 1972, 32421/72
Int. Cl. G01n *31/00*
U.S. Cl. 73—27 R 6 Claims



1. Apparatus for detecting or analysing a gas condition comprising a semiconductor material that exhibits an exhaustion region, a constant current control circuit connected to said semiconductor material for heating said semiconductor material, means controlling the constant current control circuit and maintaining the temperature of the semiconductor material, in the absence of the gas condition to be detected of analysed, at a value in the vicinity of one end of its exhaustion region, and means for measuring change in voltage drop across the semiconductor material, which change, in the presence of the gas condition to be detected or analysed, comprises a gas signal component, resulting from the change in conductivity of the semiconductor material in the presence of the gas condition, and a temperature signal component, resulting from the change in conductivity of the semiconductor material on change in the maintained temperature of the

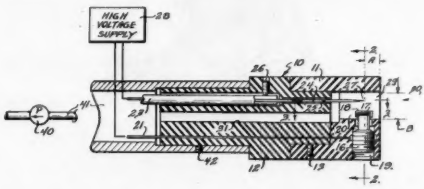
material imposed by the constant current control circuit when the conductivity of the material changes.

3,879,986

PARALLEL POINT TO PLANE ELECTROSTATIC PRECIPITATOR PARTICLE SIZE SAMPLER

George A. Sehmel, Richland, Wash., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Oct. 5, 1973, Ser. No. 403,751
Int. Cl. B03c 3/04
U.S. Cl. 73—28 4 Claims



1. An electrostatic precipitator for precipitating particulate matter from a volume of fluid, comprising: a housing having a chamber therein with an opening connecting said chamber with the volume of fluid so that said volume of fluid has free access to said chamber, a passageway connected to said chamber of said housing extending from said chamber to a point without said housing so that fluid entering said chamber through said opening exhausts said chamber through said passageway, a flat conductive collector electrode surface being supported by and separate from said housing and being positioned within said chamber, an elongated electrode axially of the chamber having a point at one end and a long axis passing through said point, said elongated electrode being supported by said housing and being positioned within said chamber in spaced-apart relationship with said flat conductive surface and with said long axis parallel thereto, said point being abreast of said flat conductive surface and directed toward said opening with the distance between said point and said volume of fluid through said opening being less than or equal to two-thirds of the narrowest cross-sectional dimension of said opening, and voltage supply means coupled to said electrode and said surface to provide a voltage sufficient to cause a corona discharge therebetween, whereby particulate matter in the fluid contacting said corona discharge is precipitated onto said surface.

3,879,987

DEVICE FOR EXAMINING INNER PRESSURE RESISTANCE OF GLASS BOTTLE

Tomita Yasuhiro, Nishinomiya, and Nakayama Katsutoshi, Itami, both of Japan, assignors to Yamamura Glass Kabushiki Kaisha, Hyogo, Japan

Filed Sept. 24, 1973, Ser. No. 399,804
Claims priority, application Japan, Dec. 29, 1972, 48-3166
Int. Cl. G01n 3/10
U.S. Cl. 73—37 8 Claims

1. A device for examining the inner pressure resistance of a glass bottle, comprising:

a. a horizontal conveyor means (10*a*) for horizontally conveying a plurality of rows of glass bottles in succession at equal spaces;

b. an endless conveyor means (2) provided around it with a plurality of head holders (4) having a plurality of head assemblies (22) at right angles to the direction of movement of the endless conveyor means (2) at spaces equal to those of the bottles on the horizontal conveyor means (10*a*) and adapted to convey the head assemblies (22) horizontally in synchronism with the bottles in an examination zone;

c. head assemblies (22) vertically movably supported in the head holders (4);

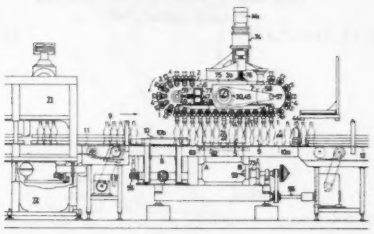
d. guide rails (49) for lowering and conveying the head assemblies (22) in the examination zone;

e. a valve means (19) provided in the head assembly (22), operatively connected to a conduit for pressurized fluid;

f. a nozzle (14) supported in the head assembly (22) movably with respect to the valve means (19);

g. an annular packing (15) of a resilient material provided at the lower end of the nozzle (14);

h. a squeezing means (16, 28, 22*c*), provided at the lower end of the nozzle (14) and the lower portion of the head means respectively for resiliently deforming the annular packing (15) in a radial direction;



i. a pressure air supply conduit (20) for moving the nozzle (14) upward connected to the lower portion of the head assembly (22);

j. a valve means (30) for supplying pressure air to the conduit (20);

k. a valve means (45) for supplying pressurizing fluid to the nozzle (14);

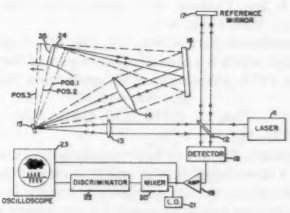
l. whereby the annular packing (15) is resiliently deformed in a radial direction, the valve means (19) is opened, and pressurized fluid for examination from a conduit (18) connected to the valve means (19) is introduced into a bottle through the nozzle (14).

3,879,988

OPTICAL COMPARATOR FOR MEASURING VIBRATION ON A ROTATING OBJECT

Gordon B. Jacobs, Manlius, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Dec. 19, 1973, Ser. No. 426,235
Int. Cl. G01n 21/22
U.S. Cl. 73—71.3 8 Claims



1. Apparatus for optically measuring a small vibrational motion at the surface of a rotating object, comprising:

a. a source of a beam of collimated coherent illumination,

b. means to divide the beam into a reference and an analytic beam,

c. means to transform the path of said analytic beam in synchronism with said object rotation to cause impingement on said object at a substantially constant angle of

incidence throughout a given rotation to increase coherence,

d. means to intercept the analytic beam after reflection from said surface element, and

e. an optical detector upon which returning reference and analytic beams impinge, said detector having adequate bandwidth to produce a heterodyne between said beams containing Doppler frequency terms indicative of said vibration.

3,879,989

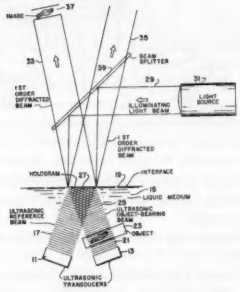
ULTRASONIC HOLOGRAPHY

Byron B. Brenden, Richland, Wash., assignor to The Battle Development Corporation, Columbus, Ohio

Filed Aug. 3, 1966, Ser. No. 569,914

Int. Cl. G01n *29/04*

U.S. Cl. 73—67.5 H **32 Claims**



15. A method of producing a hologram of an object with ultrasonic energy comprising the steps of:

a. directing a first beam of ultrasonic energy to an object and thence through a coupling medium to a hologram detecting plane responsive to ultrasonic energy; and

b. directing a second beam of ultrasonic energy through a coupling medium to interfere with said first beam of ultrasonic energy at an angle at said hologram detecting plane to form an ultrasonic hologram, said first and second beams having substantially the same frequency.

3,879,990

TESTING DEVICE FOR STRETCHABLE FABRIC UNDER SIMULATED BODY STRESSES

Herman J. Joy, Latham, N.Y., assignor to Cluett Peabody & Co., Inc., New York, N.Y.

Continuation-in-part of Ser. No. 180,792, Sept. 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 46,688, June 16, 1970, abandoned. This application Nov. 27, 1973, Ser. No. 419,307

Int. Cl. G01b *5/30;* **G01n** *3/08*

U.S. Cl. 73—95 **35 Claims**

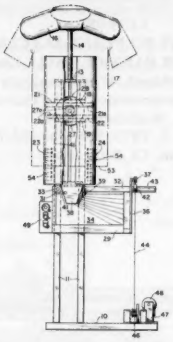
1. Apparatus for testing and recording distention characteristics of a stretchable fabric article under a simulated body movement stress, the apparatuus comprising in combination: a fabric carrying means arranged for movement to distend the fabric article,

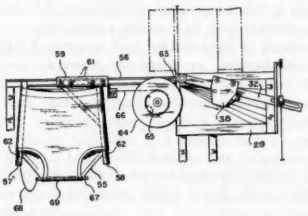
a force applying means for applying a controlled variable increasing force to move the fabric carrying means,

a recording means for recording a measure of the fabric article's distention in relation to the controlled variably increasing force.

2. The apparatus of claim 1 with the force applying means including

a beam arranged for constant controlled movement about a pivot from a horizontal position toward a generally vertical position, and





a weight connected operatively to the fabric carrying means freely slidable on said beam.

3,879,991

APPARATUS FOR TESTING LOAD BEARING MEMBERS

Ulrich Ristow, Neu-Isenburg, and Alfred Schneider, Bremen, both of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main and Ingenieurburo Schneider & Sudhop, Bremen, both of, Germany

Filed Aug. 24, 1973, Ser. No. 391,054

Claims priority, application Germany, Aug. 25, 1972, 2241976; Aug. 25, 1972, 7131565

Int. Cl. G01n *3/08*

U.S. Cl. 73—95 **5 Claims**

1. An apparatus for the load testing of load bearing members, comprising in combination:

a. a base frame having a variable outline;

b. a plurality of spaced first mounting attachment means carried by said base frame for selectively receiving an end of diverse load bearing members to be tested;

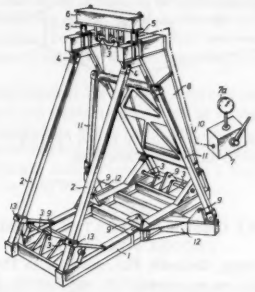
c. a bridge-like stand assembly connected to said base frame at a plurality of locations spaced from one another;

d. a carrier beam displaceably secured to said stand assembly at a distance from said base frame at least at two spaced locations on said stand for movement with respect to said base frame to vary the distance between said beam and said base frame;

e. a plurality of spaced second mounting attachment means carried by said beam for selectively receiving an end of diverse load bearing members to be tested;

f. power means connected between said beam and said stand for urging said beam to change its distance from said base frame, whereby the load bearing test member secured to at least one of said first mounting attachment

means and to at least one of said second mounting attachment means is placed under a test load; and

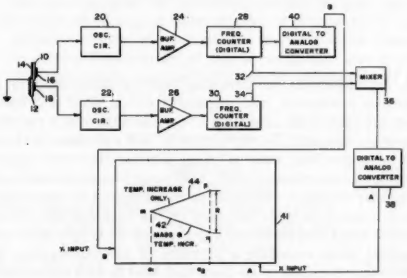


g. means for setting the force exerted by said power means to obtain a determined test load.

3,879,992
MULTIPLE CRYSTAL OSCILLATOR MEASURING APPARATUS

Ralph E. Bartera, La Canada, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 36,618, May 12, 1970, abandoned. This application Dec. 8, 1971, Ser. No. 205,803
Int. Cl. G01n *31/06*
U.S. Cl. 73—30 **22 Claims**



1. Apparatus for use in measuring temperature and mass accretion in a deposition environment by the use of oscillation circuits comprising:

first and second crystal means with surfaces, said crystal means having a ratio of frequency-temperature coefficients different from the ratios of their frequency-mass accretion coefficients;

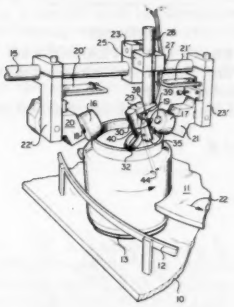
means for holding said crystal means adjacent to one another for exposure of their surfaces to the same deposition environment, so they experience substantially the same temperature and the same mass accretion per unit area; and

means for coupling said crystal means to different oscillation circuits to permit the measurement of their individual frequency changes.

3,879,993
METHOD AND APPARATUS FOR INSPECTING GLASS CONTAINERS

Thomas B. Sorbie, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Sept. 28, 1973, Ser. No. 401,869
Int. Cl. G01n *19/08*
U.S. Cl. 73—104 **14 Claims**

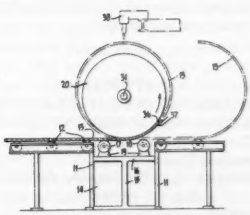


1. In apparatus for inspecting glass containers for defects in the rim or sealing surface thereof comprising, container indexing means for successively presenting containers to an inspection station, means at said station for rotating a container about its vertical axis, a stationary member extending over said station, a pair of spaced-apart, downwardly extending arms connected to said stationary support, pivot means at the lower end of each said arm, container rim contacting rollers mounted on said pivot means for steadying and centering the container during rotation, resilient means biasing said rollers in container contacting direction, a thin strip of flexible, resilient tape, a support for holding said tape in a downwardly angled loop with the lower edge of the loop portion of the tape in contact with the rim surface of the container, said looped tape being sufficiently resilient to yield upwardly as a container is brought into station and means carried by said support for sensing the distortion of said loop when encountered by a defect in the container rim.

3,879,994
PLATE ROLLING

Kenneth Michael Hume, 8 Lister St., East Kew, Victoria, Australia (3102)

Filed Aug. 16, 1973, Ser. No. 389,028
Int. Cl. B21d *5/12*
U.S. Cl. 72—127 **7 Claims**



1. A method of rolling plate to form a cylindrical article which comprises gripping a leading edge of a length of plate with a mandrel so that the plate is tangential to the mandrel from the said edge, rotating the mandrel which engaging the remainder of the plate against the mandrel by pressure means to move the plate to curve a forward part of the plate about

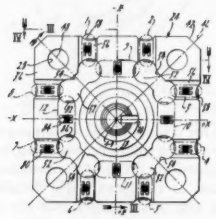
the mandrel into a semi-cylindrical shape, subsequently further advancing the plate until the rearward part of the plate and its trailing edge pass beyond contact with the mandrel, and then gripping the said trailing edge with the mandrel and turning the mandrel again to curve the rearward part of the plate about the mandrel into a semi-cylindrical shape so that said forward and rearward parts together complete the formation of a cylinder.

3,879,995

STRAIN GAGE TRANSDUCER

George Z. Libertiny, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 13, 1974, Ser. No. 469,580
Int. Cl. G01l *5/16*
U.S. Cl. 73—133 R **9 Claims**



1. A transducer suitable for use in the strain-gage measurement of a plurality of forces and moments acting upon the transducer, said transducer comprising: a substantially square baseplate, the center of said baseplate being located at the intersection of two imaginary diagonal lines drawn between opposite corners of the baseplate, said baseplate having four openings equidistantly located from the center of said baseplate, each of said openings being located between said center and a corner of said baseplate, being symmetrical with respect to one of said diagonal lines, and being formed by two circular holes located on opposite sides of one of said diagonal lines, said circular holes being interconnected by an open slot, said circular holes and slot extending through said baseplate, said baseplate having eight grooves on each of its square surface areas, each of said eight grooves extending from an edge of said plate to one of said circular holes, and said baseplate having two grooves on each of its four edges, each of said two grooves interconnecting a groove on one of said square surface areas with a groove on the opposite square surface area, and strain gage means for measuring tension and compression forces in each of said grooves and circular holes and at locations on said square surface areas.

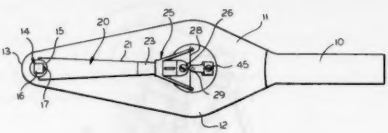
3,879,996

METER TRANSLATION DEVICES FOR TORQUE MEASURING WRENCHES AND THE LIKE

Talmage O. Green, Schaumburg, Ill., assignor to Snap-on Tools Corporation, Kenosha, Wis.

Filed Oct. 4, 1973, Ser. No. 403,603
Int. Cl. G01l *5/24*
U.S. Cl. 73—139 **10 Claims**

1. A translation member for interposition between a mechanical movement and a measuring dial calibrated thereto, a pointer stub shaft journalled relative to said calibrated dial to rotarily support a pointer in confronting relation to said calibrated dial, a highly flexible small diameter wire of high tensile strength convoluted around said pointer stub shaft, and a substantially featherweight sling with outwardly sprung resilient arms to anchor the ends of said convoluted wire to convolutely tension the latter around said pointer stub shaft to



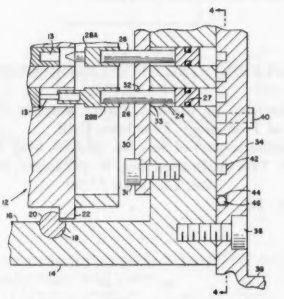
render the pointer responsive to the operation of said translation member in all planar directions.

3,879,997

PRESSURE CHECK APPARATUS FOR ELECTRICAL CONNECTOR CONTACTS

James A. Mann, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 29, 1974, Ser. No. 437,568
Int. Cl. G01l *5/00*
U.S. Cl. 73—141 R **1 Claim**



1. An apparatus for checking contact installation in an electrical connector, said apparatus comprising: a cylinder block provided with a plurality of cylinders therein; a plurality of pistons mounted for movement in said cylinders; said pistons being provided with "o" rings; a cover disposed adjacent one side of said cylinder block, said cover being provided with a plurality of piston passageways and disposed to limit piston travel; a manifold plate disposed on the opposite side of said cylinder block and including a hi-pressure air supply inlet, said manifold plate including a plurality of air passageways for conducting hi-pressure air from said inlet to said cylinders to actuate said pistons therein; said pistons being provided with adaptor tips for contacting either male or female contacts; and said cylinder block being provided with opposing slots and a two prong pin to engage said slots and secure said connector to said cylinder block.

3,879,998

DEFORMATION RESPONSIVE WEIGHING APPARATUS

Richard S. Bradley, Fairmont, Minn., assignor to Weigh-Tronix, Inc., Armstrong, Iowa

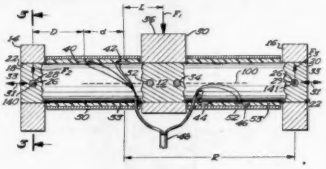
Filed June 26, 1973, Ser. No. 373,790
Int. Cl. G01l *1/22*
U.S. Cl. 73—141 A **12 Claims**

1. A deformation-responsive weighing apparatus for weighing a load comprising:

a substantially straight, longitudinal bar being elastically deformable in response to a load vector applied between the ends thereof;

a pair of supporting members, each supporting an end of said bar, each supported end of said bar being free to move relative to its said supporting member about an axis generally perpendicular to a plane defined by the longitudinal axis of said bar and the load vector in response to the load vector being applied to the bar between its ends, thereby permitting linear deformation of the bar while avoiding reverse bending of the bar and the resulting nonlinearities of bar deformation caused by reverse bending;

a load applying member on said bar between said supporting members and contacting said bar at a single location to apply a load to the bar at said single location, said load applying member cooperating with said supporting members to elastically deform said bar when a load is applied to said bar by said load applying member;



a plurality of pairs of strain gauges operatively mounted on said bar to detect deformation of said bar caused by forces applied to said bar by loading and to vary their electrical properties in response to such deformation, the two strain gauges comprising each pair of strain gauges being longitudinally spaced apart along said bar with the two gauges of each pair of strain gauges being positioned between said load applying member and one of said load supporting members, the longitudinal distance separating the two gauges of each said pair of strain gauges being substantially equal to the distance separating the two gauges of each of the remaining pairs of gauges; and

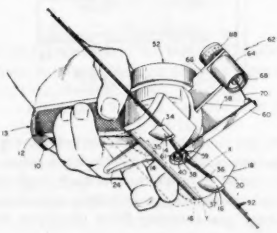
electrical measuring circuitry operatively connected to said plurality of pairs of strain gauges to measure the changes in electrical properties of said strain gauges and to produce an output representative of the magnitude of the load applied to the bar.

3,879,999

TENSION METERS

Erwin J. Saxl, Pin Hill, Harvard, Mass. 01451

Filed May 2, 1973, Ser. No. 356,349
Int. Cl. G01l *5/06*
U.S. Cl. 73—144 **11 Claims**



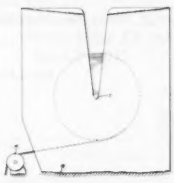
1. A tension meter comprising a base, a pair of spaced filament engaging members fixed with respect to each other and each having a filament engaging surface, a third filament engaging member movably mounted on said base and disposed between said pair, said third member movable in a plane perpendicular to a reference line tangent to said surfaces of said pair, said members being adapted to engage a filament with said pair of members and said third member disposed on opposite sides of the filament, means connected to said third member for indicating the magnitude of its motion, first biasing means operative to cause said third member to deflect from a straight path of filament engaged by said members, and damping means for damping vibrations of said third member in said plane, said damping means comprising a cylinder, a piston disposed within said cylinder for sliding motion, means operatively connecting said piston with said third member, and an adjustable valve in said cylinder.

3,880,000

METHOD AND APPARATUS FOR MONITORING AND CONTROLLING AMBULANT STRIP MATERIALS, ESPECIALLY SUITABLE FOR USE IN THE MANUFACTURE OF INSULATORS FOR INDUCTIVE DEVICES

Richard D. Burns, Holland, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Filed Jan. 5, 1972, Ser. No. 215,543
Int. Cl. G01b *5/04, 5/06*
U.S. Cl. 73—159 **23 Claims**



1. A method of monitoring and controlling ambulant strip material in the manufacture of insulators for use in slots of inductive devices comprising the steps of:

passing a strip of material along a predetermined path with at least one strip edge passing closely adjacent an actuator having a strip engaging portion adapted to be moved generally parallel of the predetermined path when the strip of material is beyond at least on preselected dimensional limit;

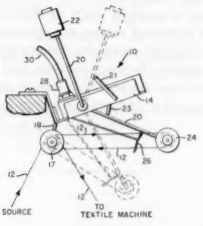
bringing a portion of the strip into engagement with the strip engaging portion when the strip of material is beyond the at least one preselected dimensional limit causing the strip engaging portion to move in one direction generally parallel of the predetermined path; obstructing directly with the strip engaging portion further passage of the strip along the predetermined path with the strip engaging portion being jammed by said portion of said strip; and

regulating movement of the strip of material, with means for controlling motion of the strip of material, in response to movement of the actuator.

3,880,001
YARN TENSION OR BREAK MONITORING APPARATUS

Edward Merrick Hogan, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 25, 1974, Ser. No. 454,418
Int. Cl. G01l 5/04
U.S. Cl. 73—160 5 Claims

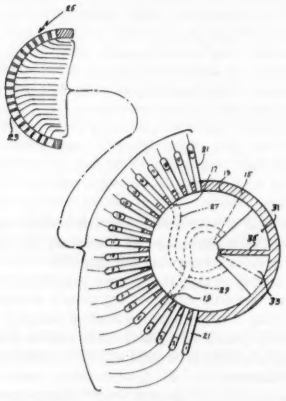


1. An apparatus to detect a variation in tension or a break in yarn being forwarded under tension in a path, said apparatus comprising: a body member located adjacent said path; a first pulley around which said yarn passes rotatably mounted to said body member, an arm mounted to said body member at a location spaced from said first pulley; means for biasing said arm against said tension; a second pulley around which said yarn passes rotatably mounted to said arm for swinging movement with said arm toward and away from said path; and means engaging said yarn intermediate said first and second pulleys for detecting when the yarn moves more than a predetermined distance away from said path.

3,880,002
ROTARY ANGLE OF ATTACK INDICATOR

Roger W. Gallington, Qtrs. 4307 H, U.S. Air Force Academy, Colo. 80840

Filed Aug. 28, 1973, Ser. No. 392,397
Int. Cl. G01c 21/00
U.S. Cl. 73—180 3 Claims

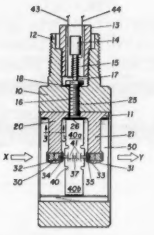


1. A rotary angle of attack indicator for use in an aircraft cockpit instrument comprising, a case, a divider for separating the interior of said case into at least two chambers, a rotatable member disposed in said case including a rotor having two rotor ports on the outer periphery thereof, and an internal air passage leading from each of said rotor ports to separate chambers in said case, a plurality of pressure sources located on the leading edge of the aircraft wing, and means for transmitting the pressures from the aircraft wing to the chambers in said case including a series of tubes positioned along one side of said case and passing therethrough to communicate with said rotor ports and pressurize said chambers, such that variations in pressures produce a corresponding rotation of the rotatable member which is proportional to the angle of attack of the aircraft.

3,880,003
FLUID FLOWMETER

Douglas L. Jameson, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Nov. 21, 1973, Ser. No. 417,896
Int. Cl. G01f 1/10
U.S. Cl. 73—231 R 7 Claims

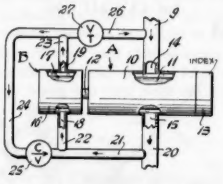


1. A method of measuring fluid flow comprising:
introducing a fluid stream into a tubular passageway;
passing the fluid stream around a strut fixed within the tubular passageway and having a generally flat downstream face perpendicular to the fluid flow and introducing turbulence into a zone of the fluid stream downstream of said strut;
passing the turbulent fluid stream into a rotor having two blades of magnetic material located in said turbulence zone for rotation in response to the fluid flow; and
sensing the rotation of the magnetic rotor blades with a magnetic pick-up element.

3,880,004
COMPENSATED ROTARY GAS METER

Theodore A. St. Clair, Fairfield, Conn., assignor to Textron Inc., Providence, R.I.

Filed July 12, 1973, Ser. No. 378,708
Int. Cl. G01f 3/08
U.S. Cl. 73—254 7 Claims



1. A rotary gas meter having a rotor unit having inlet means and outlet means, said rotor unit having a rotor and a stator and having a capacity to measure in each cycle of rotations a predetermined volume of gas including a predetermined volume of leakage gas resulting from clearance between said rotor and said stator of said rotor unit, and means for returning from said outlet means to said inlet means of said rotor unit during each cycle of operations thereof a volume of gas substantially equal to said predetermined volume of leakage gas and in which said rotor unit is a primary rotor unit, and

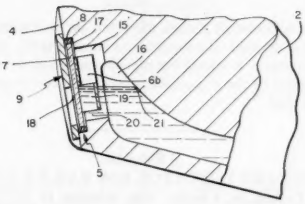
said means for returning said predetermined volume of leakage gas comprises a secondary rotor unit driven by said primary rotor unit, said secondary rotor unit having a capacity to return from said outlet means to said inlet means of said primary rotor unit at each cycle of the secondary rotor unit a volume of gas substantially equal to said predetermined volume of said leakage gas.

3,880,005

FLUID LEVEL SIGHT GAGE FOR DYNAMOELECTRIC MACHINE MOUNTED WITHIN THE MACHINE FRAME

John Leonard Butterfield, and James Lawrence Wenzel, both of Erie, Pa., assignors to General Electric Company, Wilmington, Mass.

Filed Nov. 12, 1973, Ser. No. 414,982
Int. Cl. G01f *23/02*
U.S. Cl. 73—334 **5 Claims**



1. In an oil level sight gage for a dynamoelectric machine, the combination comprising,

a. a dynamoelectric machine having an oil containing housing and means in said housing for mounting a sight gage so that the sight gage does not extend beyond the housing including,

1. a slot in said housing,
2. a recessed portion in said slot communication with the interior of said housing, said recessed portion defining a ledge for supporting a sight gage,

b. a sight gage mounted in said slot and supported on said ledge, said sight gage including,

1. a transparent sight glass for providing a visible indication of the oil level in the interior of said housing,
2. a resilient edge mounting means for said glass comprising a radial member surrounding said sight glass, said radial member and said sight glass being larger than said recess whereby said member is compressed when mounted on said ledge defined by said recess thereby sealing said glass in said recess and applying radial pressure to the edge of said glass so that the sight glass is not subject to bending stresses as the housing flexes due to temperature and vibration.

3,880,006

ELECTRONIC TEMPERATURE SENSING SYSTEM

Noel Poduje, Needham Heights, Mass., assignor to Stow Laboratories, Inc., Hudson, Mass.

Filed Aug. 7, 1972, Ser. No. 278,557
Int. Cl. G01k *7/24*
U.S. Cl. 73—362 AR **10 Claims**

2. A temperature sensing system comprising:

a circuit including

means for providing first and second currents along respective paths for application to a sensor module; and means operative in response to a signal voltage from said sensor module to provide an output indication of sensed temperature;

a sensor module including

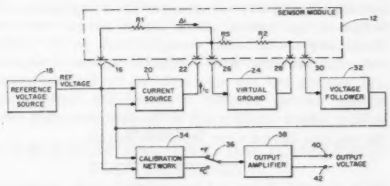
a resistance temperature dependent element;

means for applying said first current from said circuit along a first path to one terminal of said element;

means for applying said second current from said circuit along a second path to said one terminal of said element;

means in said sensor module for producing a predetermined adjustment in said second current;

means for providing a signal voltage for said circuit representative of the voltage response of said element to said



first and second currents and representative of temperature sensed by said element; and

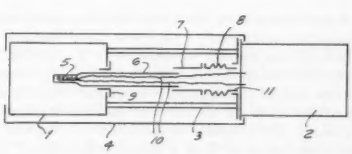
means for providing a predetermined adjustment in the slope and offset of said signal voltage by an amount producing a predetermined correspondence between said signal voltage and the temperature sensed by said element throughout the operating temperature range whereby different sensor modules can be interchanged with said circuit without system recalibration.

3,880,007

MEASURING TEMPERATURE IN A VERY-HIGH TEMPERATURE ENVIRONMENT

Hans Heinrich Emschermann; Bruno Fuhrmann, and Dieter Huhnke, all of Braunschweig, Germany, assignors to Felten & Guilleaume Carlswerk AG, Cologne, Germany

Filed Feb. 21, 1974, Ser. No. 444,386
Claims priority, application Germany, Feb. 23, 1973, 2308887
Int. Cl. G01k *1/12, 7/00*
U.S. Cl. 73—362 AR **15 Claims**



1. An arrangement for measuring temperature in a very-high-temperature environment, comprising, in combination, a heat-insulating container; temperature-responsive means located outside said heat-insulating container and operative for generating an analog temperature-indicating signal indicative of the temperature to which said temperature-responsive means is exposed; and electronic buffer storage means contained in said heat-insulating container so as to be insulated from the heat of the very-high-temperature environment, said electronic buffer storage means being connected to said temperature-responsive means and operative for receiving said analog temperature-indicating signal and temporarily storing a corresponding signal indicative of the value of said analog temperature-indicating signal for the purpose of subsequent readout of the stored signal by a readout device located in a cooler environment.

13. A method of measuring temperature in a very-high-temperature environment, comprising, in combination, the first step of placing in the very-high-temperature environment temperature-responsive means operative for generating an analog temperature-indicating electrical signal indicative of

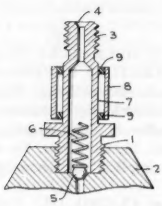
the temperature to which the temperature-responsive means is exposed and also placing in the very-high-temperature environment a heat-insulating container containing an electrical-energy-consuming electronic buffer storage circuit generating heat during operation and protected by the container from the heat of the very-high-temperature environment and electrically connected to the temperature-responsive means and operative for receiving the analog temperature-indicating signal and temporarily storing a corresponding signal indicative of the value of the analog temperature-indicating signal; and the second step of subsequently bringing the electronic buffer storage circuit into a cooler environment and there connecting to the buffer storage circuit an electrical-energy-consuming readout device generating heat during operation and reading out the signal stored by the electronic buffer storage means, whereby to avoid the faster temperature buildup which would result in the heat-insulating container if the readout device were included therein.

3,880,008

ARRANGEMENT FOR OCCASIONALLY DETERMINING THE PRESSURE IN A HYDRAULIC OR PNEUMATIC SYSTEM

Nils Aage Juul Eilersen, 226-232 Gongehusvej, DK-295o Vedbaek, Denmark

Filed Apr. 2, 1973, Ser. No. 346,803
Int. Cl. G01l 9/12
U.S. Cl. 73—398 C **6 Claims**



1. A non-return valve for a fuel injection pump comprising an elongated substantially cylindrical valve housing having a longitudinal flow passage surrounded by a cylindrical wall of a length and wall-thickness suitable for making it operable as a pressure sensitive electrode of a pressure sensing capacitor when subjected to the pressure of fuel flowing through said flow passage, and a tubular element surrounding said wall and insulated therefrom to form a counter electrode of said pressure sensing capacitor.

3,880,009

PRESSURE TRANSDUCER

Samuel Andrew Johnston, Fontana, Wis., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed May 24, 1973, Ser. No. 363,446
Int. Cl. G01l 9/12
U.S. Cl. 73—398 C **6 Claims**

1. A variable capacitance type pressure transducer comprising:

a substrate of dielectric material,

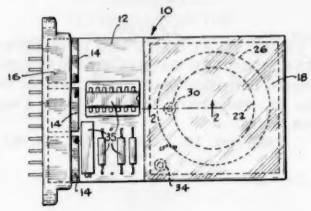
a land of electrically conductive material affixed thereto,

a flexible electrically conductive diaphragm covering said land, spaced therefrom, and sealed to said substrate, said land and said diaphragm forming two plates of a capacitor,

a cap covering said diaphragm, spaced therefrom and sealed to said substrate,

a port providing communication for a pressure medium to the otherwise closed volume surrounding said diaphragm and defined by said cap and said substrate, from the space external thereto,

a port providing communication for a pressure medium to the otherwise closed volume defined by said diaphragm and said substrate, from the space external thereto, and



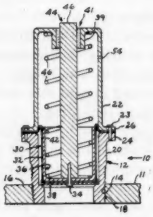
electrical circuit means mounted on said substrate, connected to said diaphragm and to said land, and adapted to produce a signal having characteristics varying as a function of the capacitance between said diaphragm and said land.

3,880,010

PRESSURE INDICATOR FOR RAILWAY CARS

Ervin I. Pietsch, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Aug. 14, 1973, Ser. No. 388,295
Int. Cl. G01l 7/08
U.S. Cl. 73—406 **1 Claim**

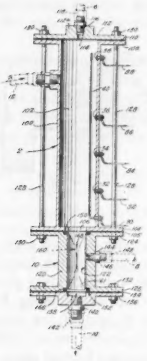


1. A pressure indicator for a railway car comprising: a fixed assembly having lower and upper cylindrical portions, said lower cylindrical portion engaging an opening in a pressurized portion of a rail car; said lower and upper cylindrical portions each having transversely extending flanges holding therebetween a flexible diaphragm; a movable assembly at least a portion of which is mounted within said fixed assembly comprising an inner cylindrical portion and a color coded rod portion viewable from the side of the car removably affixed to said inner cylindrical portion; a coil spring mounted within said indicator surrounding said rod portion and engaging said fixed upper cylindrical portion and said inner cylindrical portion; said upper cylindrical portion having a bleed opening therein to avoid pressure buildup and a downwardly extending tubular portion containing an elastomeric seal; said flexible diaphragm engaging said inner cylindrical portion and adapted to move in response to pressure changes in said railway car whereby an increase in pressure will move said assembly against the bias of said coil spring with said rod passing through said seal and indicate pressure change in said car to a viewer standing near the car.

3,880,011
AUTOMATIC SAMPLER

Paul R. Johnson, Mineral Wells, Tex., assignor to Harsco Corporation, Harrisburg, Pa.

Filed Feb. 14, 1974, Ser. No. 442,509
Int. Cl. G01n *1/14*
U.S. Cl. 73—421 B **12 Claims**

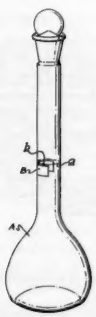


1. Apparatus to draw a metered quantity of liquid comprising: a container having an inlet passage and a discharge passage; a pump having a suction line and a pressure line; means to connect the suction line of the pump to said container to reduce pressure in said container to draw liquid through said inlet passage; a pressure actuated valve in said outlet passage, said valve being normally open; means to connect said pressure line to said pressure actuated valve; means to drive said pump to close said pressure actuated valve; and means to vent the container and the pressure actuated valve when a predetermined volume of liquid has been drawn into said container.

3,880,012
INTEGRAL SHADED AREA ON SINGLE MARK VESSEL TO AID IN VIEW OF MENISCUS

Bryan Percy Shapcott, Barnsley, England, assignor to Wood Brothers Glass Company Limited, Barnsley, England

Filed June 5, 1972, Ser. No. 259,612
Int. Cl. G01j *19/00*
U.S. Cl. 73—426 **3 Claims**

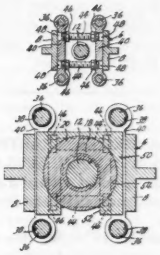


1. A graduated measuring vessel of relatively clear glass or other transparent relatively light colored material, the invention comprising a single volume mark vessel having a cylindrical neck through which liquid is introduced and which is of minor diameter as compared to the body of the vessel so that when the vessel is filled with liquid a slender column of liquid extends into said neck with a relatively small diameter meniscus at the top, a single graduation line extending around said neck to show the measured volume of liquid in the vessel and a permanent integral dark area of preselected length and width dimensions extending around at least a portion of said neck in predetermined spaced relation to but not more than 1 millimeter below the graduation line, the top edge of said dark area being precisely parallel to said graduation line, whereby said dark area imparts a predetermined, undeviating dark shading to the curved underside of the meniscus within said neck to enable the meniscus to be viewed more clearly against the light background of the vessel material.

3,880,013
ADAPTOR FOR MOUNTING OPERATING POWER DRIVE UNITS ON VALVES

Virgil O. Barnes, P.O. Box 14, and George E. Johnson, P.O. Box 353, both of Missouri City, Tex. 77459

Filed Feb. 13, 1974, Ser. No. 442,236
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.15 **8 Claims**



1. An adaptor for mounting a power drive unit having a power output spindle on a valve having a U-shaped yoke, a threaded valve stem extending through said yoke parallel to its sides legs and through a bushing formed by said yoke at the closed end thereof, and a stem nut threaded on said stem and rotatably engaged in said bushing, said stem nut projecting outwardly from said bushing to form a lug which may be engaged to turn said nut, said adaptor comprising:

a. a base plate having a central aperture, said base plate being adapted to be positioned with its plane normal to the valve stem against the outer end of said yoke bushing with its aperture encircling said stem nut lug,

b. a pair of torque bars insertable through said yoke transversely to said stem and respectively at opposite sides thereof,

c. two pairs of tie bolts fixed in said base plate normally thereto so as to extend toward said torque bars externally of said yoke bushing, the extended ends of each pair of tie bolts extending through the respectively opposite ends of one of said torque bars,

d. a nut threaded on each of said tie bolts at the side of the associated torque bar distal from said base plate,

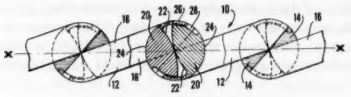
e. means for attaching said power drive unit to said base plate with the output spindle of the former disposed coaxially with the central aperture of said base plate, and

f. connecting means operable to connect said output spindle to said stem nut lug, whereby rotation of the former turns the latter.

3,880,014
DRIVE CHAIN

Wilfrid H. Bendall, 12 Castle Hill Rd., Pawcatuck, Conn. 02891

Filed Aug. 5, 1974, Ser. No. 494,738
Int. Cl. F16g 13/02
U.S. Cl. 74—245 R 5 Claims

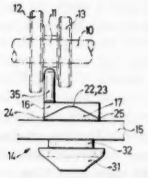


1. A drive chain having apertured link members arranged end to end with overlapping interconnected end portions, said link members having side bar portions extending on each side of an aperture between interconnecting end portions of substantially semi-cylindrical form, each of said end portions having a portion thereof intersecting an aperture of an adjacently aligned link member, said portion thereof comprising a link interconnection bearng surface at each inner end of an aperture and a drive sprocket engaging surface at each outer end of a link and having the bearing surface in articulating contact with a like bearing surface of adjacently aligned link members, each of said end portions further comprising an arcuate groove and resilient means engaging a groove of an adjacent link member and maintaining said members in elastically separable end to end alignment.

3,880,015
SHIFTING ARRANGEMENT, PARTICULARLY FOR EFFECTING AXIAL SHIFTING OF GEARS

Ernst Kranzler, Stetten, and Gerhard Kuhlmann, Stuttgart, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Mar. 27, 1974, Ser. No. 455,204
Claims priority, application Germany, May 14, 1973, 7318088
Int. Cl. F16h 5/04
U.S. Cl. 74—337.5 14 Claims

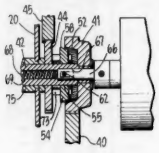


1. In an arrangement comprised of a part mounted for movement along a predetermined path between two positions, in combination, rotatable engaging means engaging said part and operative, upon rotation from a first to a second angular position through an intermediate neutral position, for moving said part from one to the other of said two positions thereof; and displacing means including stationary cam means contacting said rotatable engaging means for causing said engaging means to shift in one axial direction when rotating from said first to said neutral position and in opposite axial direction when rotating from said neutral to said second position.

3,880,016
VARIABLE DISPLACEMENT APPARATUS FOR PLATEN AND TRACTOR FEED

John W. Jamieson, San Leandro, and Ronald G. Weller, Fremont, both of Calif., assignors to Qume Corporation, Hayward, Calif.

Filed Mar. 7, 1974, Ser. No. 448,870
Int. Cl. F16h 57/00
U.S. Cl. 74—405 15 Claims



1. In combination with a drive train for coupling rotary motion from a source to a platen having a shaft, said drive train including means for providing positive motion detent, the improvement comprising means for enabling variable positional alignment of said platen relative to said positive detent means, said alignment means including:

first gear means coupled to said drive train;

second gear means coupled to said platen;

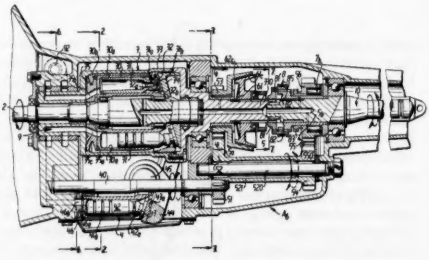
motion transfer means coupled to said second gear means and normally coupled to said first gear means when in a first position; and

means for translating said motion transfer means to a second position in which said first gear means is disengaged therefrom and for enabling rotation of said motion transfer means independently of said first gear means.

3,880,017
HYDROMECHANICAL TRANSMISSION

Takayuki Miyao; Minoru Ohya; Masatoshi Yamada; Toshitaka Kuno; Masao Yamaguchi; Haruo Katagiri; Katsuhiko Hattori; Masanori Sato, all of Nagoya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya-shi; Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya-shi and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, all of Japan

Filed Aug. 30, 1972, Ser. No. 284,765
Claims priority, application Japan, Aug. 30, 1971, 46-66466
Int. Cl. F16h 47/04, 47/08, 47/00
U.S. Cl. 74—687 46 Claims



1. A hydromechanical transmission comprising:

a main casing;

an input shaft rotatably supported within said main casing;

an output shaft rotatably supported within said main casing;

a positive displacement pump including a first rotator drivingly connected to said input shaft and a second rotator drivingly connected to said output shaft;

a variable positive displacement motor being rotatable normally and reversely and including a rotatable first motor member having a motor shaft, a second motor member supported within said main casing and displacement controlling means for controlling the displacement of the motor;

an oil pressure circuit including two conduit means operative to establish fluid communication between the intake of said pump and the output of said motor and between the output of said pump and the input of said motor;

switching means for changing the rotational direction of said motor;

a first stepdown transmission means having a first clutch means provided between the motor shaft of the rotatable first motor member and said output shaft for engaging the motor shaft of the rotatable first motor member with said output shaft when the motor rotates in its normal direction; and

a second stepdown transmission means having a second clutch means, a reverse mechanism, and a different stepdown transmission range from that of said first stepdown transmission means, and provided between the motor shaft of the rotatable first motor member and said output shaft for engaging the motor shaft of the rotatable first motor member with said output shaft when the motor rotates in its reverse direction.

22. A hydromechanical transmission comprising:

a main casing;

an input shaft rotatably supported within said main casing; an output shaft rotatably supported within said main casing;

an axial piston type pump including a rotatable cylinder drum perforated with a plurality of cylinders and drivingly connected to said input shaft, a rotatable swash plate drivingly connected said output shaft, and pistons being fitted in each of the cylinders of said cylindrical drum and being set against the swash plate;

an axial piston type motor including a rotatable cylinder drum perforated with a plurality of cylinders and fixed on a motor shaft which is parallel to the output shaft and is journalled within said main casing, a tiltable swash plate supported on a trunion shaft journalled within said main casing, displacement controlling means for controlling the displacement of the motor, and pistons being fitted in each of the cylinders of the cylindrical drum of the motor and being set against the tiltable swash plate;

an oil pressure circuit, including two conduit means, operative to establish fluid communication between the intake of the pump and the output of the motor and between the output of the pump and the input of the motor or between said intake of the pump and said input of the motor and between said output of the pump and said output of the motor;

flow rate regulating means provided between said two conduit means for regulating the flow rate of the fluid to be supplied to the motor by short-circuiting a part of the fluid from one of the two conduit means to the other;

two-way valving means for changing the fluid communication between the intake of said pump and the output of said motor and between the output of said pump and the input of said motor into fluid communication between said intake of said pump and said input of said motor and between said output of said pump and said output of said motor;

a first stepdown transmission gear provided between the motor shaft of the cylinder drum of the motor and said output shaft and composed of a first gear fixed on the motor shaft, a second gear fixed on one of the ends of a shaft journalled on the main casing and meshing with said first gear, a third gear rotatably supported on said output shaft and meshing with said second gear and first clutch means for engaging said third gear and said output shaft when said third gear rotates in the same direction as that of said output shaft; and

a second stepdown transmission gear having a different stepdown transmission range from that of said first stepdown transmission gear, provided between the motor shaft and said output shaft and composed of said first gear, said second gear, a fourth gear fixed on the other end part of the shaft one which said second gear is fixed, a fifth gear as a reverse mechanism journalled on a shaft fixed on said main casing and meshing with said fourth gear, a sixth gear rotatably supported on said output shaft and meshing with said fifth gear, and a second clutch means fixed on said sixth gear for engaging said sixth gear and said output shaft when said sixth gear rotates in the same direction as that of said output shaft.

27. A hydromechanical transmission including:

a main casing;

an input shaft rotatably supported within said main casing; a first output shaft rotatably supported within said main casing;

a second output shaft being coaxial with said first output shaft and rotatably supported within said main casing;

an axial piston type pump including a rotatable cylinder drum perforated with a plurality of cylinders and drivingly connected to said input shaft, a rotatable swash plate drivingly connected to the first output shaft, and pistons being fitted in each of the cylinders of the cylindrical drum and being set against said swash plate;

an axial piston type motor including a rotatable cylinder drum perforated with a plurality of cylinders and fixed on a motor shaft which is parallel to said output shaft and is journalled within said main casing, a tiltable swash plate supported on a trunnion shaft journalled within said main casing, displacement controlling means for controlling the displacement of the motor, and pistons being fitted in each of the cylinders of the cylinder drum of the motor and being set against the tiltable swash plate;

an oil pressure circuit, including two conduit means, operative to establish fluid communication between the intake of said pump and the output of said motor and between the output of said pump and the input of said motor;

flow rate regulating means provided between the two conduit means for regulating the flow rate of the fluid to be supplied to said motor by short circuiting a part of the fluid from one of the two conduit means to the other;

switching means connected to said tiltable said tiltable swash plate for switching the inclination of said tiltable swash plate from the left to the right, or vice versa, thereby changing the rotational direction of said motor;

a first stepdown transmission gear provided between the motor shaft of the cylinder drum of said motor and said output shaft and composed of a first gear fixed on said motor shaft a second gear fixed one one of the end parts of a shaft journalled on the main casing and meshing with the first gear, a third gear rotatably supported on said output shaft and meshing with said second gear, and first clutch means for engaging said third gear and the first output shaft when said third gear rotates in the same direction as that of said output shaft;

a second stepdown transmission gear having a different stepdown transmission range from that of the first stepdown transmission gear, being provided between said motor shaft and said output shaft and composed of said first gear, said second gear, a fourth gear fixed on the other end part of the shaft on which said second gear is fixed, a fifth gear as a reverse mechanism journalled on a shaft fixed on said main casing and meshing with said fourth gear, a sixth gear rotatably supported on the second output shaft and meshing with said fifth gear, and a one-way clutch fixed on said sixth gear for engaging said sixth gear and said second output shaft when said sixth gear rotates faster than said second output shaft in the normal direction; and

a dog clutch disposed among the first and second output shafts and said sixth gear and composed of a first engaging member fixed on said first output shaft, a second

engaging member fixed on said second output shaft, a third engaging member fixed on said sixth gear, and a slidable connecting member which engages or disengages said first and second engaging members and said second and third engaging members.

28. A hydromechanical transmission including:

a main casing;

an input shaft rotatably supported within said main casing;

a first output shaft rotatably supported within said main casing;

a second output shaft rotatably supported within said main casing;

a positive displacement pump including a first rotator drivingly connected to said input shaft and a second rotator drivingly connected to said output shaft;

a variable positive displacement motor being rotatable normally and reversely and including a rotatable first motor member having a motor shaft, a second motor member supported within said main casing and displacement controlling means for controlling the displacement of said motor;

an oil pressure circuit including two conduit means operative to establish fluid communication between the intake of said pump and the output of said motor and between the output of said pump and the input of said motor;

switching means for changing the rotational direction of said motor;

a first stepdown transmission means having a first clutch means provided between the motor shaft of the rotatable first motor member and the first output shaft, the first clutch means engaging with the first output shaft when the motor rotates in the normal direction;

a second stepdown transmission means having a second clutch means, a reverse mechanism, and a different stepdown transmission range from that of the first stepdown transmission means, being provided between the motor shaft of the rotatable first motor member and one of the first and second output shafts, the second clutch means engaging said one of said first and second output shafts when the motor rotates sin the normal directions;

third clutch means disposed among the first and second output shafts and the last member of the second stepdown transmission means for connecting the first output shaft with the second output shaft when the second output shaft is driven in the normal direction, and for connecting the second output shaft with the last member of the second transmission means when the second output shaft is driven in the reverse direction.

3,880,018

CHAIN SAW SHARPENER

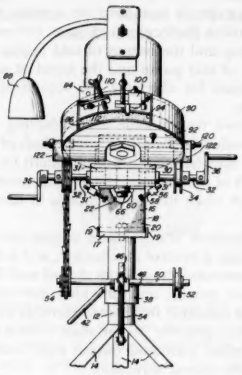
Jack F. Simington, Box 141, Star Route, Chiloquin, Oreg. 97624

Filed Aug. 30, 1973, Ser. No. 392,889

Int. Cl. B23b *63/16*

U.S. Cl. 76—25 A **9 Claims**

1. A chain saw sharpening device comprising a support, a rotary grinding head journalled from said support, a pair of chain support mounts mounted on said support on opposite sides of said head for shifting along a path extending transversely of the axis of rotation of said head and contained in a plane paralleling said axis and containing a chord of the outer periphery of said head, each of said chain support mounts including means for support of a length of saw chain therefrom, said chain support mounts comprising pulley wheels



journalled for rotation about axes at least generally paralleling said path.

3,880,019

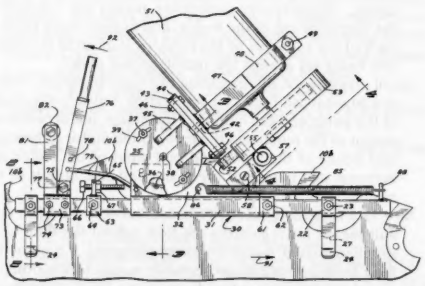
SAW SHARPENER APPARATUS

Melburne E. Young, Rt. 2, Pierz, Minn. 56364

Filed June 27, 1974, Ser. No. 483,805

Int. Cl. B23d *63/14*

U.S. Cl. 76—37 **15 Claims**



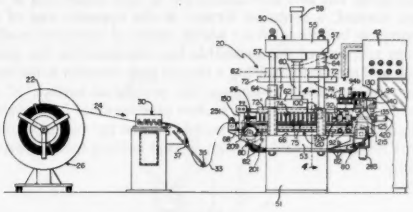
1. In a saw sharpner mountable on a saw blade having a span of saw teeth, an elongated beam having first and second ene portions, first and second clamps means mounted on the beam first and second end portions respectively for clampingly mounting the beam on a saw blade to be supported thereby, a carriage mounted on the beam for reciprocal movement between the clamp means, lever means mounted on the beam for selectively moving the carriage relative the beam and means mounted on the carriage for movement therewith for mounting a motor driven grinding wheel, the last mentioned means including a motor mount, and adjustable means mounting the motor mount on the carriage for movement relative thereto between various angular positions and retaining the mount in a selected angular position.

3,880,020

MAKING BLADES FOR TIRE CURING MOLDS

Dennis W. Clem, Suffield, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed June 6, 1973, Ser. No. 367,655
Int. Cl. B21k 11/00; B26d 1/00; B21d 43/28
U.S. Cl. 76—104 85 Claims



1. The method of making blades for tire curing molds in a press having a plurality of subpresses located therein for progressively blanking out said blades from a running length of stock comprising locating each of said subpress units in a respective predetermined home position in the press, moving selected ones of said subpress units from said respective home position each to a preselected second position relative to said stock in response to a program of command signals carried by a numerical control tape, partially closing said press to secure said subpress units in their respective second positions, and then operating said press and the subpress units held thereby progressively to blank out blades from said stock.

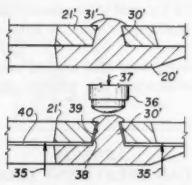
50. Apparatus for making blades for tire curing molds from running length strip metal stock, the apparatus comprising a press having a main ram, a bed plate fixed beneath said ram, a frame mounted on said bed plate, a plurality of subpress units carried on said bed plate and actuated by movement of said main ram toward said bed plate; a positioner mechanism mounted on said press and operable selectively to move at least one of said units from one to another predetermined position relative to said ram and said stock, a plurality of tracks fixed on said frame to carry said traveler in movement parallel to the direction of movement of said stock; said traveler having a latching device for cooperative connection with selected ones of said units.

3,880,021

METHOD OF MAKING A CAST ARTICULATED TOOL

Karl Hannes, White Plains, and Paul C. Rossi, Franklin Square, both of N.Y., assignors to Coats & Clark, Inc., New York, N.Y.

Filed Jan. 17, 1974, Ser. No. 434,106
Int. Cl. B21k 11/06
U.S. Cl. 76—104 A 9 Claims



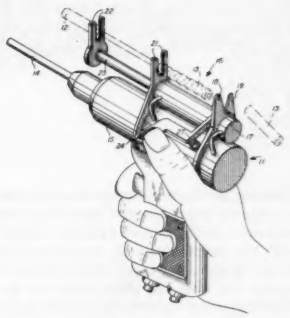
1. A method for forming a tool of the type having first and second articulated members of a die casting metal joined at a pivot joint by a pin extending from the first member through a correspondingly shaped aperture in the second member, with the pin having an enlarged head to hold said members together, said method comprising intercasting said first and second members with the pin on said first member being tapered with a larger diameter and toward said first member, and then upsetting said pin to provide a clearance space between said first and second members.

3,880,022

WIRE CUTTING AND INSULATION STRIPPING APPARATUS

Harry E. Miller, Winston-Salem, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Mar. 27, 1973, Ser. No. 345,383
Int. Cl. H02g 1/12
U.S. Cl. 81—9.5 R 14 Claims



1. An apparatus for cutting an insulated wire and for stripping a desired length of cut insulation from the wire wherein the apparatus is mounted on a portable wire wrapping tool; said apparatus comprising:

a first pair of insulation cutting blades mounted on the wire wrapping tool, the first pair of insulation cutting blades being mounted in an opposed relationship so as to cut insulation when an insulated wire is inserted therebetween and the first pair of insulation cutting blades being spaced a sufficient distance from each other so that only the insulation is cut when the insulated wire is inserted therebetween;

a second pair of insulation cutting blades mounted on the wire wrapping tool directly adjacent to the first pair of insulation cutting blades, the second pair of insulation cutting blades being mounted in an opposed, spaced relationship like the first pair of insulation cutting blades; means for cutting the insulated wire mounted on the wire wrapping tool a predetermined distance from the first pair of insulation cutting blades on the side opposite to the second pair of insulation cutting blades, the distance between the first pair of insulation cutting blades and the wire cutting means being equal to the desired length of insulation to be cut and stripped from the insulated wire; means for opening the wire cutting means to receive an insulated wire therein and for closing the wire cutting means to cut an insulated wire positioned therein; and

power assisted means for displacing said first and second pair of insulation cutting blades relative to each other to increase the distance therebetween, the first pair of insulation cutting blades bearing against the insulation between the first pair of insulation cutting blades and the wire cutting means and the second pair of insulation cutting blades bearing against the insulation of the insulated wire to displace the cut insulation relative to the insulated wire as the first and second pair of insulaton cutting blades are displaced away from each other thereby stripping the cut insulation from the insulated wire.

3,880,023

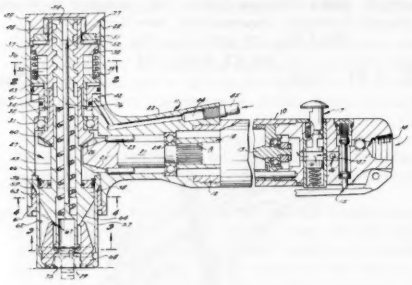
CRIMPING MECHANISM IN A NUT RUNNER

Lester A. Amtsberg, Utica, and William K. Wallace, Barneveld, both of N.Y., assignors to Chicago Pneumatic Tool Company, New York, N.Y.

Division of Ser. No. 121,867, March 8, 1971, Pat. No. 3,747,441. This application Apr. 5, 1973, Ser. No. 348,274

Int. Cl. B25b *27/00*

U.S. Cl. 81—10 10 Claims



5. Nut crimping mechanism comprising a rotatable sleeve; a group of crimping levers pivoted about the interior of the sleeve in circumferentially spaced relation to each other and rotatable with the sleeve as a unit; each lever having a long arm, a short arm terminating in an inner jaw face, and a pivot support between the long and short arms; the several levers having a normal position wherein the several jaw faces define a multi-walled socket for reception of a multi-sided nut and for subsequent rotation of the nut upon rotation of the sleeve, the jaw faces being arranged to transmit in the normal position of the levers rotation of the sleeve to a nut received in the socket, wedge means movable axially of the several levers for cooperating with the several long arms to pivot the several levers so as to force their short arms to bring their jaw faces compressively against the sides of a nut received in the socket, and means for selectively controlling rotation of the sleeve or axial movement of the wedge means.

3,880,024

PORTABLE POWER WRENCH

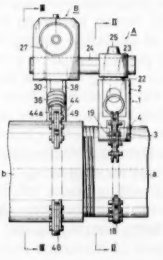
Suekichi Asada, Nagoya, Japan, assignor to Kabushiki Kaisha Tokai Tekkosha, Nagoya, Japan

Filed Jan. 9, 1974, Ser. No. 431,973

Claims priority, application Japan, July 30, 1973, 48-85729

Int. Cl. B25b *13/50*, *13/52*

U.S. Cl. 81—57.34 4 Claims



1. A portable power wrench, comprising a first holding means including a body having a head portion and vice holders integrally formed with the head portion, vice pieces detachably secured to the vice holders to substantially immovably hold a first pipe member relative to the body, said head portion being provided with a hole, a stud secured in said hole, a shaft received by said stud, said first pipe member being held by said holding means in such a manner that the longitudinal axial center line of the first pipe member extends parallel to said shaft, a hydraulic cylinder slidably mounted on said shaft and swingable about said shaft, said hydraulic cylinder having a piston rod which is reciprocably movable in a plane perpendicular to said shaft; and a second holding means including a swingable bar pivotally connected to said piston rod at one end thereof, a serration formed at the opposite end of the swingable bar along an arc whose center of curvature is offset from said end of the swingable bar connected to the piston rod, and means for holding a second pipe member while causing said serration to engage the peripheral surface of the second pipe member, said second pipe member being axially aligned with said first pipe member when the two pipe members are held by said first and second holding means, respectively.

3,880,025

MACHINE TOOL FOR THE MACHINING OF SHAFTS

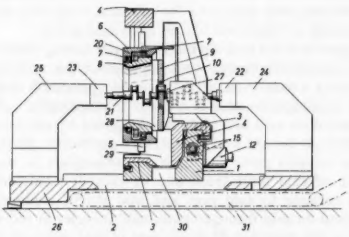
Bruno Kralowetz, and Robert Obtresal, both of Steyr, Austria, assignors to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Aktiengesellschaft, Steyr, Austria

Filed May 22, 1974, Ser. No. 472,495

Claims priority, application Austria, June 27, 1973, 5668/73

Int. Cl. B23b *5/18*

U.S. Cl. 82—9 6 Claims



1. A machine tool for the machining of shafts, which comprises

a longitudinal guide,

workpiece-holding means for holding a workpiece in a fixed position, in which the longitudinal axis of said workpiece is parallel to said longitudinal guide,

a tool slide assembly, which is movable along said longitudinal guide and comprises a compound rest, which consists of two slides, which are movable relative to each other in directions which are normal to each other and transverse to said guide,

an annular tool, which has inwardly facing cutting means and is carried by said compound rest and adapted to surround a workpiece held by said workpiece-holding means,

means for revolving said tool around said workpiece, and

means for coordinating the relative movements of said slides.

3,880,026

CAN TREATMENT TOOL

Alan Adamson, 28 Leaman Dr., Dartsmouth, Nova Scotia, Canada

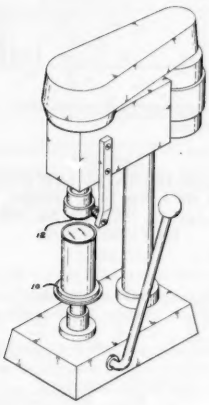
Filed Apr. 1, 1974, Ser. No. 456,600

Int. Cl. B23b *1/00*

U.S. Cl. 82—47 4 Claims

3. Method of treating can seams for inspection thereof, wherein the can is of a type having a cylindrical wall terminat-

ing at at least one end in a double seam comprising a body hook wherein the end of the material of the can wall is curved outwardly then backwardly along the can wall, and a cover hook wherein the edge of the cover is curved to extend along the outside of the body hook, inward across the end thereof, then in between the body hook and the can wall,



comprising the steps of:

holding said can in a manner to leave said seamed end free for cutting,

moving said can parallel to its cylindrical axis, relatively toward a cutter, with the seam end advanced, along a locus of movement, such that said cutter severs said cover hook without severing said body hook, and displaces said severed cover hook away from said seam;

3,880,027

APPARATUS FOR MANUFACTURE OF ENDLESS BELTS

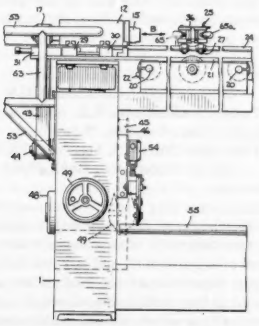
Wilhelm Ganser, and Gottfried Raskin, both of Stolberg-Busbach, Germany, assignors to Uniroyal Aktiengesellschaft, Aachen-Rothe-Erde, Germany

Filed Apr. 20, 1973, Ser. No. 353,032

Claims priority, application Germany, Apr. 24, 1972, 2220042

Int. Cl. B23b *3/04*

U.S. Cl. 82—98 **5 Claims**



1. An apparatus for the manufacture of endless annular elements from a tubular blank comprising

a mandrel for supporting the tubular blank along a longitudinal axis;

means for rotatably supporting the mandrel;

a cutting means spaced from the mandrel, said cutting means including a first and second cutting element, the cutting elements being longitudinally spaced from each other along the axis;

means for extending the first and second cutting elements to penetrate the rotating tubular blank whereby one of the cutting elements maintains the tubular blank in position when the other cutting element penetrates the blank; and

means for retracting the first and second cutting elements.

3,880,028

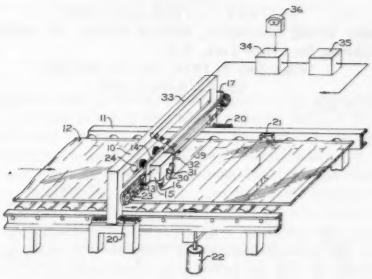
METHOD AND APPARATUS FOR MONITORING AND CONTROLLING GLASS CUTTING

Walter Frederick, Jr., Cumberland, Md., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 25, 1974, Ser. No. 445,697

Int. Cl. B26d *3/08*; **C03b** *33/02*

U.S. Cl. 83—7 **17 Claims**



1. A glass scoring apparatus comprising:

support means for holding a piece of glass in a scoring position;

a scoring tool mounted to contact said piece of glass in the scoring position;

means for providing relative motion between said glass and said scoring tool so as to effect scoring of said glass; and sound pickup means sensitive to sound waves created by said scoring, said sound pickup means producing an electric signal as a function of the intensity of said sound waves.

3,880,029

METHOD FOR GANGED SCORING OF GLASS

Robert M. Bonaddio, Monroeville, and Laverne O. Parkhill, Lower Burrell, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 390,446, Aug. 22, 1973. This application June 19, 1974, Ser. No. 480,806

Int. Cl. B26d *3/08*; **C03b** *33/04*

U.S. Cl. 83—7 **4 Claims**

1. A method for scoring glass along a precisely determined path of intended cut comprising:

projecting a visual image onto a scoring table, which image corresponds to the fixed path of a scoring means,

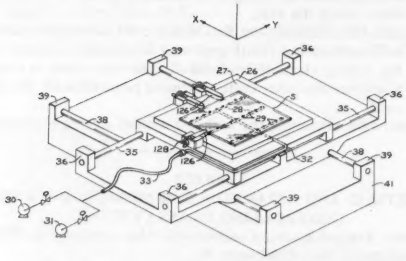
placing a trial piece of glass on the table,

scoring said trial piece while locked in place on the table, aligning the projected visual image to superimpose the image on the resulting scores on the trial piece,

removing the trial piece,

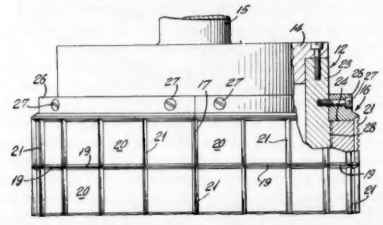
aligning a second piece of glass to be scored on the table so that the visual image is superimposed on the desired path

of cut in said second piece of glass,
locking said second piece of glass in the aligned position,



and
scoring said second piece of glass with said scoring means.

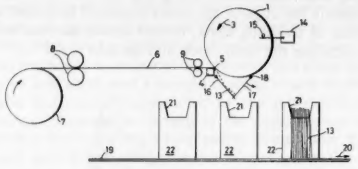
3,880,030
ROTARY CUTTER ASSEMBLY
Stanley Irving Rosengren, Morton Grove, Ill., assignor to Nabisco, Inc., New York, N.Y.
Filed July 1, 1974, Ser. No. 484,684
Int. Cl. A21c *11/04*
U.S. Cl. 83—9 **8 Claims**



1. A rotary cutter assembly comprising in combination a drum, dough cutting bar means extending longitudinally along the surface of said drum, a plurality of dough scoring rings encircling said drum spaced along said cutting bar means, said rings including ring segments abutting each side of said cutting bar means, an annular row of blocks positioned between adjacent rings, and dough scoring bar segments parallel to said cutting bar means positioned between said blocks and abutting said adjacent rings.

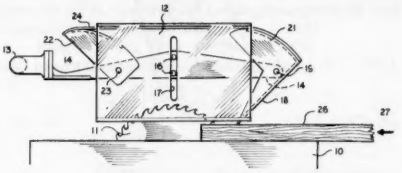
3,880,031
MACHINE FOR MANUFACTURING TINSEL
Gerd Rodermund, In der Breite 24, 763 Lahr, and Helmut Kappus, Lahr, both of Germany, assignors to said Rodermund, by said Kappus
Filed Mar. 20, 1974, Ser. No. 452,796
Claims priority, application Germany, Nov. 7, 1973, 7339745
Int. Cl. B26d *7/28*
U.S. Cl. 83—81 **5 Claims**

1. A machine for manufacturing tinsel comprising a cutting device for cutting sheet material into small strips and a feed device for the sheet, characterized in that the cutting device comprises a rotary cutter having an effective length which is equal to the width of a strip fed continuously, said rotary cutter comprising a cutting edge arranged parallel to the axis of said rotary cutter, said feed device comprising a pair of feed rollers arranged near the cutting edge, a chute for collecting the cut-off tinsel threads, receiving means, and a counting means provided for counting the number of revolutions of the rotary cutter, and causing the chute to drop off the collected



tinsel threads on said receiving means after a predetermined number of revolutions.

3,880,032
FEELER OPERATED SAW GUARD
Dwight C. Green, Rt. 1, Box 74-B, Ashburn, Va. 22011
Filed Aug. 22, 1973, Ser. No. 390,555
Int. Cl. B27g *19/02*
U.S. Cl. 83—102.1 **3 Claims**

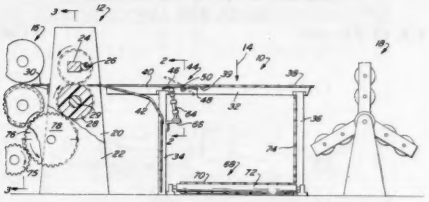


1. In combination with a saw table having a saw projecting through the table, a guard mechanism comprising:
a. a support disposed above the saw table;
b. a feeler pivoted to the support and having one free end normally disposed closely adjacent to the saw table to be contacted by a work piece having relative movement with respect to the saw;
c. a first non-linear cam rotated by the feeler as the feeler rotates in response to being contacted by a work piece;
d. a second non-linear cam and mounted for rotation on the support;
e. a flexible tension strap connecting the cams together so that they rotate in unison;
f. and a saw guard disposed over the saw and normally positioned over the saw and close to the saw table and mechanically engaging at least one of said tension strap and cams for movement toward and away from the saw table, whereby rotation of the feeler by a work piece causes the cams to rotate and lift the guard vertically a distance just sufficient to allow the work piece to pass under the guard and contact the saw.

3,880,033
ROTARY SHEAR ASSEMBLY
Donald R. Taylor, Haddonfield, N.J., assignor to Molins Machine Company, Inc., Camden, N.J.
Filed June 26, 1973, Ser. No. 373,722
Int. Cl. B26d *1/40;* **B65h** *35/08*
U.S. Cl. 83—104 **6 Claims**

1. Apparatus comprising a rotary shear assembly positioned between a double facer machine and a slitter-scorer of a corrugator, said assembly comprising a rotary shear at the upstream end of the assembly and a frame having a web support surface at the downstream end of the assembly, said rotary shear including a rotatably mounted cutting blade for repetitively cutting a web transversely into sheets, means for receiving sheets cut by the rotary shear, a diverter supported by said frame downstream from the rotary shear, said diverter being mounted for movement from an inoperative position wherei it does not interfere with normal passage of a web to an operative position wherein it prevents sheets from moving

along a path normally followed by a web, said surface being spaced from the downstream end of the rotary shear by a gap, said gap being upstream from the diverter, said sheet receiving



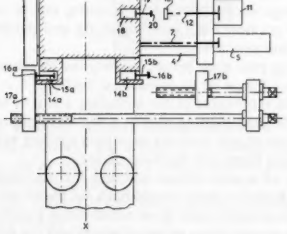
means being below said surface, said diverter having forward and rear portions converging to a crest, and means coupled to said diverter for pivoting said diverter about a horizontal transverse axis adjacent said crest.

3,880,034

SEQUENTIAL STAMPING OF STRIP MATERIAL

Roger Sapolsky, Saint Gratien, France, assignor to Gulf and Western Manufacturing Company (Hastings), Southfield, Mich.

Filed May 3, 1974, Ser. No. 466,581
Claims priority, application France, May 9, 1973, 73.16767
Int. Cl. B21d *28/08*; **B26f** *1/40*
U.S. Cl. 83—220 **7 Claims**



1. Apparatus for feeding and indexing continuous strip relative to a material working device such as a punch or the like whereby said device may sequentially operate along three parallel longitudinal axes of said strip, comprising, in combination:

A. means for feeding said strip in increments,

B. means for supporting said strip in operative position adjacent said material working device,

C. indexing means comprising

1. a platform for supporting said strip,

2. means for holding said strip to said platform between successive incremental feeds thereof,

3. lateral guide means for guiding said strip over said platform,

4. drive means for sequentially and cyclically indexing said platform and the strip thereon between three positions, the first said position being one in which a first longitudinal axis of said strip lying to one side of the median longitudinal axis thereof is aligned with said material working device, the second said position being one in which a second longitudinal axis of said strip lying to the other side of the median longitudinal axis thereof and equidistant therefrom is aligned with said material working device, and the third said position being one in which the median longitudinal axis of said strip is aligned with said material working device, and

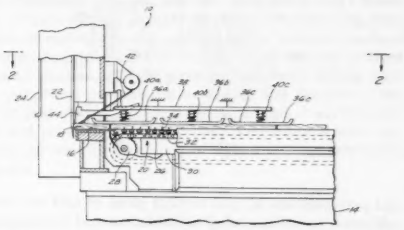
D. means for synchronizing and coordinating the feed of said strip, the actuation of said material working device and the operation of said drive means.

3,880,035

CONTINUOUS FEED BACON SLICER

William J. Divan, Centerport, N.Y., assignor to Cashin Systems Corporation, Williston Park, N.Y.

Filed Oct. 10, 1973, Ser. No. 404,853
Int. Cl. B26d *4/34*
U.S. Cl. 83—420 **3 Claims**



1. A bacon slicing machine having a rotatable slicer blade, a bed and side guide across which a bacon belly is moved forwardly into the path of the blade, an endless tractor conveyor having an upper run defining a substantially flat conveyor surface essentially planar with the bed, penetrating means on the periphery of the conveyor for engaging with surfaces of the bacon belly for feeding it forwardly into the blade, downwardly biased stationary pressure shoe means disposed above the conveyor for engaging with the upper surfaces of the bacon belly and urging the belly downwardly into engagement with the belly penetrating means extending from the conveyor to assure positive engagement in feeding of the belly into the blade, the pressure shoe means including a plurality of transversely extending pressure shoes that are adapted to engage with the upper surface of the bacon belly, a stationary support for the shoes and interposed spring means for biasing the shoes downwardly towards the conveyor into engagement with the bacon bellies, pressure applying means forwardly of the pressure shoe means, the pressure applying means including a plurality of fingers mounted at one end and the other end extending freely into engagement with surfaces of the bacon belly between the conveyor and slicing blade, at least one of the fingers engaging a side of the bacon belly while at least one finger engages the top of the bacon belly for preventing the belly trailing end from becoming askew as it is being sliced by the blade, the leading end of the conveyor and interposed between the blade and the conveyor for engaging with the surfaces of the belly to assure proper feeding of the belly into the blade and particularly belly trailing ends as the trailing end is fed forwardly by the next succeeding bacon belly thereby assuring a full slice of selected thickness, and the conveyor and pressure shoe means together with the pressure applying means cooperating in facilitating the feeding of bacon bellies continuously in endwise abutting relationship into the slicing blade.

3,880,036

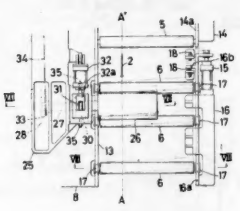
AUTOMATIC LUMBERING APPARATUS

Yosihei Yokoyama, Shimada, Japan, assignor to Yokoyama Tekko Kabushiki Kaisha, Shimada-shi, Japan

Filed Nov. 14, 1973, Ser. No. 415,624
Int. Cl. B27b *13/10*
U.S. Cl. 83—421 **13 Claims**

1. In an automatic lumbering apparatus including a main frame, a saw mounted in a vertical plane, a main bed mounted

on said main frame, a ruler device having a ruler member mounted on said main bed and laterally movable to and away from said saw, a bearing plate mounted on said main bed, an auxiliary bed mounted on said main frame and laterally spaced from said main bed, a bearing plate mounted on said auxiliary bed in parallel relation to said bearing plate on said main bed, and a plurality of conveyor rollers rotatably mounted in a horizontal plane and adapted to transport thereon the lumber to be sawn, said conveyor rollers being parallel to each other



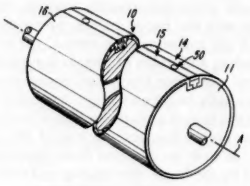
and perpendicular to said vertical plane of said saw, each of said conveyor rollers being supported on said bearing plate on said main bed at one end and on said bearing plate on said auxiliary bed at the other end, an improvement comprising at least one of said conveyor rollers which is located closely opposite to said ruler member and is angularly displaceable relative to said vertical plane of said saw in the direction of travel of said lumber, means for angularly displacing said angularly displaceable conveyor roller, and means for rotating said conveyor rollers simultaneously.

3,880,037

ROTARY ANVIL CONSTRUCTION

John C. Duckett, and Rufus Neal Ensley, both of Clyde, N.C., assignors to Dayco Corporation, Dayton, Ohio

Filed Jan. 7, 1974, Ser. No. 431,447
Int. Cl. B26d *7/20*
U.S. Cl. 83—659 **19 Claims**



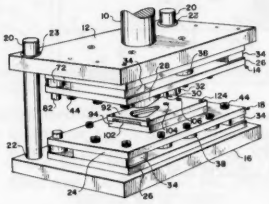
1. In combination: a rotary anvil having an outer substantially cylindrical surface and having a longitudinally extending groove therein extending inwardly from said surface; a die-cutting mat comprising a main body terminating in substantially identical L-shaped end portions which are received within said groove; each L-shaped portion having, a first planar surface including an outermost edge, a second surface arranged transverse the inner edge of said first planar surface, and a third surface extending from the terminal outer edge of said second surface and transverse said second surface; a clamping bar extending the entire distance between said first planar surfaces and having a pair of spaced clamping surface portions each engaging an associated one of said second transverse surfaces, said bar holding said mat against said anvil and having a pair of opposed outer edges each adjoining an outermost edge of an associated first planar surface, said bar having at least an outer portion thereof made of a mat-like material similar to said mat; and means fastening said bar and hence said mat against said anvil.

3,880,038

SANDWICH DIE SET

James Mangos, 9301 N. Austin, Morton Grove, Ill. 60053

Filed May 25, 1973, Ser. No. 363,996
Int. Cl. B26f *1/14*
U.S. Cl. 83—685 **6 Claims**



5. A die kit assembly comprising:

a pair of back-up plates for separate attachment to the ram and bed plates of a ram press;

means to hold said back-up plates in opposed positions on said ram and bed plates;

a pair of removable plates for attachment to said backup plates;

said removable plates including means for attaching cutting die parts to their opposing upper and lower surfaces;

each of said back-up plates carrying a flanged bushing member at two or its corners, the flanges of which are disposed toward said removable plates;

said bushings each carrying an aligning pin in adjustable press-fit relationship extending along and parallel to the axis of said ram press;

said aligning pins each projecting beyond the height of the respective flange of its associated bushing;

each of said removable plates including a pair of bore holes to receive said aligning pins in a slip-fit relationship with the flanges of said bushing members spacing said removable plates from said back-up plates;

a plurality of spacer means adapted for placement in the spacing between each of said back-up plates and its associated removable plate at selected stress points;

said spacer means being of equal height and the same height as said flanges on said bushings whereby to maintain said removable plates in substantially parallel unyielding relationship; and

means detachably holding said removable plates against said flanges and spacer means.

3,880,039

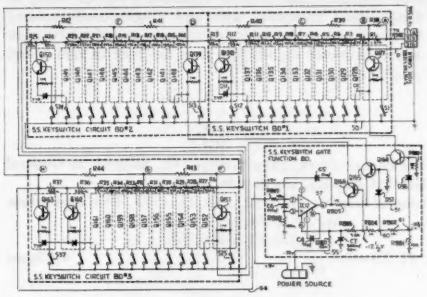
SAMPLE AND HOLD CIRCUIT FOR AN ELECTRONIC ORGAN

Richard L. Studer, Villa Hills, Ky., assignor to D. H. Baldwin Company, Cincinnati, Ohio

Filed Feb. 26, 1974, Ser. No. 445,985
Int. Cl. G10h *1/00, 5/00*
U.S. Cl. 84—1.01 **19 Claims**

1. An electric organ, comprising an array of keys of said organ, a resistance having points corresponding respectively with said keys, means responsive to actuation of any selected key of said array of keys for providing a physically undgrounded point of zero voltage at a point of said resistance corresponding with the selected key, said resistance having an invariable point of reference potential, means including a feedback loop for maintaining the voltage of said invariable point of reference potential constant where any of said keys is actuated by feeding back current through said resistance in amplitude sufficient to maintain constant said voltage of said

invariable point of reference potential, said feedback loop including a storage capacity, a voltage controlled tone signal



oscillator responsive to the voltage of a point of said feedback loop, and means for acoustically transducing said tone signal.

3,880,040

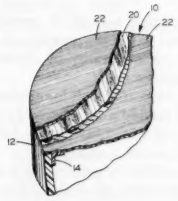
SOUND BOARD FOR STRINGED INSTRUMENT

Charles H. Kaman, Prattling Pond Rd., Farmington, Conn. 06032

Filed Oct. 16, 1974, Ser. No. 515,365

Int. Cl. G10d *3/00*

U.S. Cl. 84—291 **10 Claims**



1. In a stringed musical instrument of the type having a hollow body portion and a neck with strings extending from the outer end of the neck to a bridge located on the body, the improvement comprising:

a. a sound board for said body portion, and supporting said bridge thereon,

b. said sound board including inner and outer plies which are made from graphite fibers embedded in a resin matrix, and at least one medial ply between said inner and outer plies made from a material having a modulus of elasticity and a density generally similar to that of wood.

3,880,041

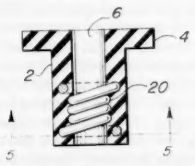
RESILIENT FASTENER

Edwin P. Markowski, Medfield, and Jerome S. Pepi, Chelmsford, both of Mass., assignors to Barry Wright Corporation, Watertown, Mass.

Filed Mar. 19, 1973, Ser. No. 342,850

Int. Cl. F16b *13/06*

U.S. Cl. 85—70 **3 Claims**



1. A fastening device adapted for assembly with two structural members so as to reduce transmission of noise and mechanical vibrations at the interface of said members, said fastening device comprising a resilient sleeve for insertion into an aperture in one of said members, said sleeve having an interior surface defining a longitudinally extending bore, an exterior flange on said sleeve for engagement with said one member, and a screw-retaining means disposed within and secured to said sleeve for engagement by a screw inserted into said sleeve through an aperture in the other of said structural members, whereby rotation of said screw in said screw-retaining means will draw said members together and cause said sleeve to shorten and bulge outwardly into tight engagement with said one member, said sleeve being made of an elastomer and said screw-retaining means comprising a helical wire coil disposed coaxially with said bore and having a multiplicity of turns with the diameters of said turns increasing from one end of said coil to the opposite end of said coil, each of said turns comprising an outer peripheral portion and an inner peripheral portion, at least some of said turns having their outer peripheral portions embedded in and bonded to the body of said sleeve and their inner peripheral portions exposed and projecting into said bore, said exposed inner peripheral portions forming a screw thread for engagement by said screw.

3,880,042

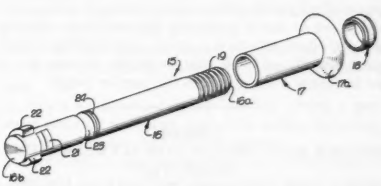
BLIND RIVET

Lloyd Sylvester Binns, Garden Grove, Calif.

Continuation-in-part of Ser. No. 249,562, May 2, 1972, abandoned. This application Aug. 28, 1973, Ser. No. 392,262

Int. Cl. F16b *13/06*

U.S. Cl. 85—72 **25 Claims**



1. In a blind rivet of the type having a rivet sleeve and a mandrel extending through said sleeve, one end of said mandrel being adapted for engagement by a pulling head, the improvement wherein said mandrel includes, adjacent the other, blind end thereof, mutually radially and axially offset first and second flanges, pulling on said mandrel one end during installation of said rivet initially causing said first flange to expand said sleeve, additional pulling causing said first flange to shear and translate axially toward said blind end as said second flange expands said sleeve.

3,880,043

PROJECTILE DELIVERY SYSTEM

William Ervin Cox, Palos Verdes Estates, and Lloyd R. Ferry, Rolling Hills Estates, both of Calif., assignors to Northrop Corporation, Los Angeles, Calif.

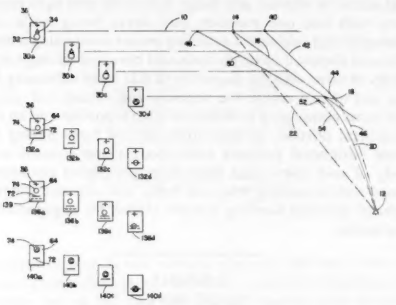
Filed Sept. 21, 1973, Ser. No. 399,529

Int. Cl. B64d *1/04*

U.S. Cl. 89—1.5 E **28 Claims**

1. A projectile delivery system for use with airborne equipment, said delivery system comprising an optical plane, means operatively forming part of said optical plane capable of presenting a target image representative of a remote target on said optical plane, display generating means for presenting a sighting reticle on said optical plane and which is shiftable thereon in response to a change in altitude of said airborne equipment, said display generating means also producing a projectile release cue spaced downwardly from said sighting reticle on said optical plane representative of a function of the location

of said remote target with respect to the airborne equipment, said target image shifting downwardly on said optical plane as said airborne equipment enters and follows along a dive path toward a ground level, processing means operatively connected to said display generating means for adjustably shifting the sighting reticle downwardly on the optical plane toward said projectile release cue in response to a reduction of altitude of the airborne equipment as the airborne equipment follows the dive path, and means also operatively associated



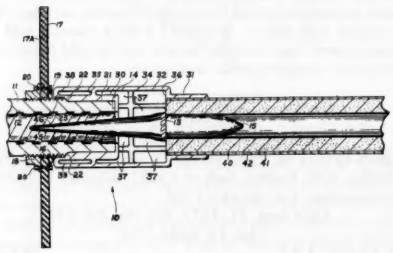
with said processing means for adjustably positioning the projectile release cue on the optical plane either toward or away from the shifting sighting reticle in response to a change in the attitude of the airborne equipment as the airborne equipment follows said dive path, said last named means shifting said projectile release cue to a desired position on said optical plane so that a projectile released from the airborne equipment when the target image and sighting reticle are substantially aligned with said projectile release cue is designed to follow a trajectory to the remote target.

3,880,044

MUZZLE ATTACHMENT FOR ACCELERATING A PROJECTLE

Abraham L. Korr, Philadelphia, Pa., and Evan Harris Walker, Aberdeen, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 5, 1973, Ser. No. 376,655
Int. Cl. F41f *1/00*
U.S. Cl. 89—8 **6 Claims**



1. In a weapon arrangement having a barrel with an open muzzle end,

a disposable substantially cylindrical adapter having openings defined by ribs in its sidewall and secured to an external surface of said barrel open end, and

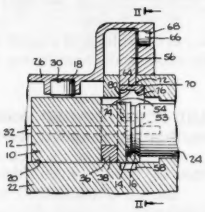
means including an explosive tube for accelerating a projectile launched conventionally from said barrel to a hypervelocity range, said explosive tube including a combustible plastic tube secured to a forward portion of said adapter and extending forwardly of said adapter, said plastic tube surrounding and containing a molded explosive cylinder, said molded explosive cylinder being in longitudinal alignment with and longitudinally spaced forwardly of said barrel, said explosive cylinder having an inside diameter slightly less than the bore of said barrel muzzle end.

3,880,045

GUN BOLT

Burton Parker Clark, Saint George, Vt., assignor to General Electric Company, Burlington, Vt.

Division of Ser. No. 381,952, July 23, 1973. This application Apr. 9, 1974, Ser. No. 459,755
Int. Cl. F41d *7/00*
U.S. Cl. 89—9 **4 Claims**



1. A gun, for firing rounds of ammunition, each round having a peripheral extractor groove, said gun comprising:

a receiver having a plurality of chambers, each having a respective interior wall;

a like plurality of bolts, each longitudinally slidable in said receiver and having a respective extractor lug for disposition within an initial, angularly defined, portion of the extractor groove of a round;

a like plurality of filler segments, each for disposition within the remainder, angularly defined, portion of the extractor groove of the round; and

transport means for initially disposing each of said filler segments within the remainder groove of the respective extractor grooves and for subsequently disposing both a respective said filler segment and a respective said extractor lug within a respective said chamber in transverse abutment with the respective said interior wall, whereby each extractor groove is substantially filled and supported over its full 360° of angular extent.

3,880,046

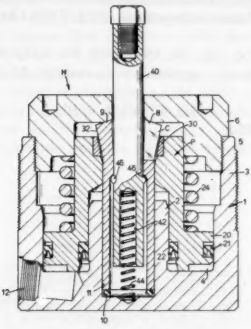
HYDRAULIC WORK SUPPORT OF THE COLLET TYPE

Donald W. Sessody, Milwaukee, Wis., assignor to Applied Power Inc., Milwaukee, Wis.

Filed Apr. 15, 1974, Ser. No. 461,091
Int. Cl. B23b *31/30*
U.S. Cl. 279—4 **3 Claims**

1. A hydraulically actuated work support comprising, a base defining an annular piston actuating chamber, a piston slideably mounted in said chamber, said piston also having a collet clamping seat, a cap mounted on said base and having a central opening therethrough; an axially shiftable, free floating collet having plunger clamping jaws at its upper end and which are adapted to be clampingly engaged by said piston seat; a spring acting between said cap and said piston to bias the piston to a collet releasing position; a work supporting plunger extending through said cap and into said collet for being clamped thereby; resilient means acting between said base and said collet for urging the latter to an upper, plunger releasing position; passage means in said base for conducting pressure fluid to said piston actuating chamber whereby when said chamber is pressurized, said piston is urged to a collet closing position, and when said chamber is not pressurized, said spring

urges said piston to a released position, said collet being freely slideable in said piston when the latter is released to thereby



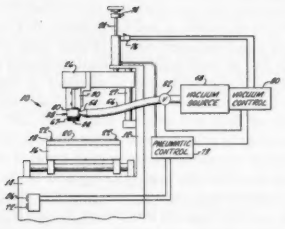
permit said resilient means to urge said collet out of engagement with said piston seat.

3,880,047

CHIP REMOVAL AND HOLD-DOWN DEVICE FOR LATERAL MOVEMENT ROUTERS

Paul A. Dosier, Newport Beach, Calif., assignor to Paul Dosier Associates, Inc., Costa Mesa, Calif.

Filed Mar. 22, 1973, Ser. No. 343,842
Int. Cl. B23c 1/20
U.S. Cl. 90—12 D **21 Claims**



1. A chip removal and hold-down attachment for use with a lateral movement router machine adapted for routing lightweight workpieces such as printed circuit boards, said machine having a spindle for mounting a cutting tool, said spindle rotatably mounted on a spindle housing, said spindle housing mounted for reciprocation on said router machine, said machine including a work surface for supporting said lightweight workpieces and registration means for locating said workpieces on said work surface, said attachment comprising:

a vacuum housing mounted on said router machine for reciprocation with said spindle housing and surrounding said cutting tool, said vacuum housing connected to a vacuum source for removal of chips produced by the router operation on a workpiece;

means located adjacent the lower surface of said vacuum housing for holding down said workpiece during said lateral movement router operation and for partially sealing said vacuum housing against said workpiece to provide a partial vacuum within said vacuum housing for the evacuation of said chips, said holding down means being the sole means for holding said workpiece down on said work surface during routing; and

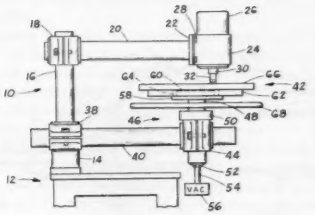
means for prohibiting said vacuum source from lifting said lightweight workpieces from said registration means prior to contact of said means for holding down with said workpiece.

3,880,048

APPARATUS FOR CUTTING IRREGULAR EDGE CONTOURS IN RELATIVELY FLAT WORKPIECES

Sanford S. Zimmerman, 46 Easton Rd., Westport, Conn. 06880

Filed Apr. 7, 1972, Ser. No. 241,950
Int. Cl. B23c 1/18
U.S. Cl. 90—13.4 **14 Claims**



1. A machine for cutting irregular shapes in relatively flat sheet material comprising:

A. a cutting tool holding device adapted to removably hold a cutting tool,

B. means for supporting said cutting tool holding device in a fixed predetermined position,

C. means for driving said cutting tool holding device while the latter is supported in said fixed predetermined position,

D. a rotary work holder holder for supporting a piece of sheet material to be cut, said work holder including

1. a vertically oriented body member,

2. a template carried by the upper end of said body member and having a flat upper surface lying in a plane for supporting the piece of sheet material to be cut and having an outer edge which defines a predetermined configuration to which the piece of sheet material is to be cut, and

3. vacuum means disposed adjacent said upper end of said body member and being adjacent to and lying parallel to said plane and operable through said template on the undersurface of a piece of sheet material supported by said template for releasably securing the piece of sheet material to said upper surface of said template,

E. means for supporting said work holder at a lower elevation than said cutting tool holding device such that said template with a piece of sheet material secured thereon is in operative association with a cutting tool held by said holding device, said supporting means including means for movably supporting said work holder for simultaneous rotation about a central axis of said work holder and for translation relative to said cutting tool holding device in a direction perpendicular to said axis of rotation of said work holder, and

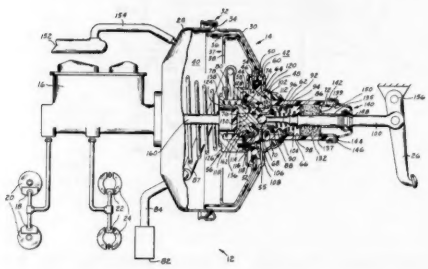
F. means disposed adjacent said cutting tool holding device and operatively associated with said outer edge of said template for determining the extent and direction of translational movement of said template in accordance with the configuration of said outer edge of said template, whereby, by a combination of rotary and translational movement of said work holder, said template is moved along the cutting tool and the sheet material is cut along a contour as determined by said outer edge of said template.

3,880,049

DUAL VALVE OPERATED PRESSURE DIFFERENTIAL SERVOMOTOR

Frederick G. Grabb; Carl D. Owens; Maxwell L. Cripe, and Daniel C. Pulaski, all of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed Dec. 26, 1973, Ser. No. 428,495
Int. Cl. F15b 9/10; F01b 25/02
U.S. Cl. 91—33 12 Claims



1. In a servomotor having a wall means for separating a front chamber from a rear chamber, control means for sequentially regulating the communication of vacuum, air at atmospheric pressure and air above atmospheric pressure to the rear chamber to develop an operational force from a pressure differential to operate a brake actuator in response to an input force, said control means comprising:

first hub means connected to said wall means having a first housing with a first axial bore therein, said first housing having a first passage connecting the first axial bore with the front chamber, said housing having a second passage connecting the first axial bore with the rear chamber, said housing having a third passage connecting the first axial bore with the atmosphere;

second hub means connected to said first hub means for transmitting the operational force to said brake actuator from said wall means, said second hub means having a second housing with a second axial bore coaxial to said first axial bore, said second housing having an entrance port through which air above atmospheric pressure is communicated to the second bore;

first valve means located in said first axial bore for controlling the communication of vacuum through the first passage;

second valve means located in said second axial bore for controlling the communication of air above atmospheric pressure from the second bore;

plunger means located in said first and second axial bores for progressively operating the first and second valve means in response to said input force; and

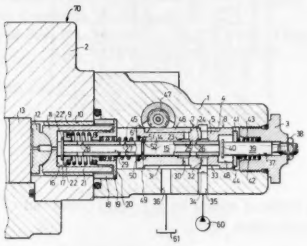
check valve means connected to the third passage in the first hub means for allowing air at atmospheric pressure to be communicated to said second passage when vacuum communication through the first passage is interrupted by movement of the first valve means and for preventing air above atmospheric pressure from entering the third passage when air above atmospheric pressure is presented to the second passage upon movement of the second valve means in response to movement of the plunger means.

3,880,050

APPARATUS FOR REGULATING THE OPERATION OF HYDRAULIC MACHINES

Werner Rometsch, Weilimdorfstrasse 56, 7016 Gerlingen, and Karl Veil, Hohenstaufenstrasse 16/2, 7336 Uhingen, both of Germany

Filed Apr. 24, 1973, Ser. No. 354,134
Claims priority, application Germany, May 17, 1972, 2223964
Int. Cl. F15b 9/10
U.S. Cl. 91—374 9 Claims



1. The combination of a hydraulic machine having a movable regulating member with a servo mechanism which is actuatable to move said regulating member in a predetermined direction, said mechanism comprising a housing having an inlet for pressurized fluid and an outlet including a cylinder; a piston displaceable in said cylinder by pressurized fluid to move said regulating member in said direction; fluid flow controlling means including a control member movable in said housing between two end poritions and a plurality of intermediate positions including a neutral position to thereby control the flow of fluid between said cylinder and said inlet and outlet; first and second resilient means mounted in said housing and acting upon said control member in opposite directions so as to bias said control member in said neutral position with forces of first and second magnitude and to bias said control member in at least some of the other positions thereof; shifting means operable to move said control member; and stop means provided in said housing and being engaged by said control member in said neutral position when said control member is not held against movement to said neutral position by said shifting means, said stop means being adjustable relative to said housing to thereby change said neutral position of said control member.

3,880,051

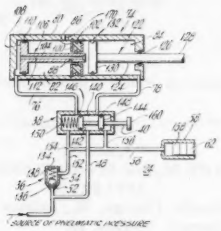
PNEUMATIC SYSTEM INCLUDING AUXILIARY OUTPUT

Daniel Eppler, Toms River, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed July 22, 1974, Ser. No. 490,289
Int. Cl. F15b 11/20
U.S. Cl. 91—411 R 22 Claims

1. A pneumatic system for a pneumatically powered tool or the like comprising: a source of pneumatic pressure; main cylinder means having a first chamber and a second chamber, said first and said second chambers being arranged in generally coaxial alignment; selectively apertured divider means disposed within said main cylinder means for selectively isolating said first chamber from said second chamber; first piston means having a head portion and a shank portion and slidably disposed within said main cylinder means first chamber so that its shank portion extends through said divider aperture, there being a passageway extending through the length of said first piston means for permitting the passage of pneumatic fluid therethrough; second piston means having a head portion and a shank portion and slidably disposed within said main cylinder means second chamber in generally coaxial alignment with said first piston means, said second piston means having

an extension at the terminating end of its shank portion protruding coaxially outwardly from said main cylinder means for operation on a workpiece, said first piston means passageway communicating at one end with said main cylinder means second chamber and communicating at its head end with said main cylinder means first chamber; valve means selectively coupling said pneumatic pressure source to said main cylinder means and operable between a first position in which said pneumatic pressure is coupled to said main cylinder means second chamber simultaneously with the coupling of said first chamber to an auxiliary output, and a second position in which said pneumatic pressure source is coupled to said main



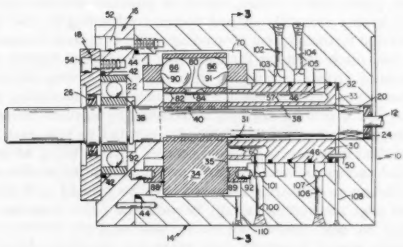
cylinder means first chamber simultaneously with the coupling of said second chamber to said auxiliary output; said first and said second piston means being arranged for tandem-like operation upon the selective pressurization of said main cylinder means first and second chambers, said first and said second piston means being independently selectively advanced upon the operation of said valve means from said first position to said second position, said first and said second piston means being selectively retracted upon the operation of said valve means from said second position to said first position, movement of said first and said second piston means between said retracted and said extended positions causing selective pressurization of said auxiliary output.

3,880,052

FLUID DEVICES

James M. Denker, Scituate, Mass., assignor to Nutron Corporation, Hingham, Mass.

Filed Oct. 1, 1971, Ser. No. 185,727
Int. Cl. F04b *13/00*
U.S. Cl. 91—501 **24 Claims**



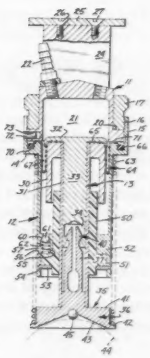
1. In a fluid device comprising:
a piston support;
a cam defining a cam surface having a plurality of cycles;
a piston mounted on said support for movement relative thereto and engaging said cam surface; and,
valving and conduits for controlling flow of fluid to and from said piston,
said piston support being movable with respect to said cam, and
each of said cycles causing movement of said piston relative to said support during movement of said piston support relative to said cam with said piston in engagement with said cam surface,
that improvement wherein:
said cycles are arranged in *m* sets, each set including *n* cycles and each of *m* and *n* being greater than one, all cycles of one of said sets being of one amplitude, all cycles of another of said sets having an amplitude different from said one amplitude, and each cycle of said one of said sets being intermediate cycles of said another of said sets,
said valving includes 2 *mn* ports arranged in *m* sets, the ports of each of said sets of ports being associated with a respective one of said sets of cam cycles and being arranged to permit flow of fluid to and from said piston when said piston is in engagement with the cycles of said respective one of said sets of cycles, and
said ports and conduits being arranged such that at least one of flow of fluid to said piston when said piston is in engagement with the cycles of said one of said sets of cam cycles and flow of fluid from said piston when said piston is in engagement with the cycles of said one of said sets of cam cycles is independent of flow of fluid to and from said piston when said piston is in engagement with the cycles of said another of said sets of cam cycles.

3,880,053

PUMP

Hans W. Trechsel; Allan B. Larson, both of Rockford, and John A. Ryerse, Osseo, all of Minn., assignors to TL Systems Corporation, Minneapolis, Minn.

Filed May 31, 1974, Ser. No. 475,261
Int. Cl. F01b *19/00*; **F16j** *3/00*
U.S. Cl. 92—94 **10 Claims**



1. In a pump, in combination:
a piston assembly including a hollow piston shaft, a hollow skirted piston mounted on one end of said shaft, and a piston head overlying said piston and including a central rod to be received in said shaft; a cylinder of larger internal diameter than the diameter of said hollow skirted piston;
a cylinder head having inlet and outlet ports; means removably securing said cylinder head to said cylinder;
guide means in said cylinder slidably mounting said piston shaft for linear reciprocation of said piston assembly in said cylinder;
a rolling diaphram having an apertured central portion for clamping between said piston head and said hollow skirted piston, a peripheral portion for clamping between

said cylinder head and said cylinder, and an intermediate portion reentrantly contained between said cylinder and hollow skirted piston, to divide the space within said cylinder and head into separate portions adjacent to and remote from said cylinder head;

a tappet member received in said piston shaft and releasably engaging said central rod of said piston head, for retaining said piston head in clamping relation to said piston and for imparting axial motion to said piston assembly;

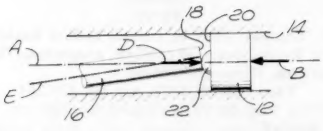
and spring means acting between said cylinder and said tappet member to normally urge said piston assembly in a direction away from said cylinder head, so that upon releasing the first named means the tappet member, main spring, cylinder, and piston assembly may be removed as a unit.

3,880,054

VALVE ACTUATOR

Frank F. Domyan, Canoga Park, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed June 27, 1973, Ser. No. 374,033
Int. Cl. F16j *1/10*; F01b *31/00*
U.S. Cl. 92—129 **2 Claims**



1. An actuator comprising: first means defining a cylinder and having a piston coaxially mounted in said cylinder for longitudinal slidable movement; a piston rod at least approximately coaxial with said cylinder and having one end slidable in said cylinder in spaced relationship thereto, said one end defining an essentially flat end surface facing said piston, said first means including a bearing fixed relative to said cylinder and having a bore in which said piston rod is slidable, the other end of said rod being an actuating member; said piston having a convex projection fixed relative thereto coaxial with said cylinder and extending toward said flat end surface on said rod; and second means causing said piston rod flat end surface and said piston projection to be biased into engagement with each other, said projection being out of contact with all structures except said piston and said piston rod flat end surface.

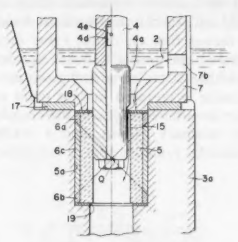
3,880,055

INJECTION PUMP FOR USE IN HOT CHAMBER TYPE DIE CAST MACHINES

Hiromi Nakamura; Zenichi Mochizuki, both of Fuji; Hiroaki Abe, Numazu, and Yosizo Komiyama, Gotenba, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 3, 1973, Ser. No. 421,284
Claims priority, application Japan, May 24, 1973, 48-57202
Int. Cl. F04b *39/12*
U.S. Cl. 92—170 **5 Claims**

1. In an injection pump for use in a hot chamber type die cast machine wherein the cylinder and the stationary ring surrounding the cylinder of said pump are made of materials having different coefficients of thermal expansion, the improvement which comprises a plurality of contact surfaces which permit relative movement of said cylinder and said stationary ring, the extensions of said contact surfaces inter-



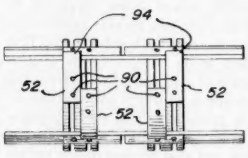
secting each other at or near a neutral point of expansion of said cylinder.

3,880,056

ENVELOPE BLANK SCORING AND FEEDING APPARATUS

Joseph J. Dohnalik, Chicago, Ill., assignor to Garden City Envelope Company, Chicago, Ill.

Filed Jan. 2, 1974, Ser. No. 430,202
Int. Cl. B31b *1/14*
U.S. Cl. 93—58.1 **11 Claims**



1. Apparatus for scoring and feeding paper sheet material including a guide bed over which paper stock is moved during processing, and a feeding and scoring system having juxtaposed elements on opposite sides of said bed and transverse thereto wherein one of said elements is the feeding and scoring apparatus and the other of said elements presents a pressure surface defining therebetween a locus or paper line at the pitch diameter of the feeding system through which the paper stock passes, the improvement comprising: said feeding and scoring apparatus including a cylindrical support drivingly mounted for rotation about an axis transverse to said guide bed, paper stock feeding members attached to said support and having arcuately shaped bodies conforming to said support and further having protruding surfaces radially extending to said pitch diameter for capturing paper stock against said pressure surface, a plurality of paper stock scoring elements attached to said support and each including a mounting portion and a scoring portion, said mounting portion being an elongated bar extending generally parallel to said axis and attached to said support, said scoring portion being an elongated narrow member mounted on said mounting portion and including an outwardly disposed edge for scoring such stock, said edge protruding radially beyond said pitch diameter defined by said feeding members, said support formed with axially spaced mounting ways extending annularly about the circumference thereof, threaded fasteners including first components captured within said ways, and cooperating threaded components adjustably attaching said mounting portions and said feeding members to said first components whereby said scoring elements and feeding members may be readily adjusted about the circumferential periphery of said support by loosening said fasteners and sliding said fasteners along said ways such that a pair of said scoring portions may be positioned at a variety of circumferentially spaced adjacent posi-

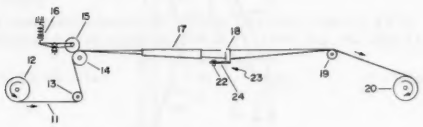
tions by adjusting said scoring elements on said support, and said feeding members forming a continuous paper stock feeding engagement with said pressure surface from one scoring element to the next scoring element such that paper stock is continuously engaged at said pitch diameter between said juxtaposed elements during a scoring operation.

3,880,057

CREASING CELLULOSIC FIBER STRIPS

Joseph H. Hollier, Jr., Pearcy, Ark., assignor to Sutco, Inc., Hot Springs, Ark.

Filed May 11, 1973, Ser. No. 359,218
Int. Cl. B31b *1/36*
U.S. Cl. 93—84 R **1 Claim**



1. An apparatus for producing a crease in an advancing cellulosic fiber strip, the apparatus comprising:

a. means for forming a longitudinal groove in a surface of the strip so that the depth of the groove is between about **15** and **50** percent of the thickness of the strip;

b. means for causing the strip to bend along the length of the groove and fold upon itself;

c. adjust means positioned downstream of the folding means for adjusting the proximity of the halves of the plicature produced in the advancing cellulosic fiber strip; and

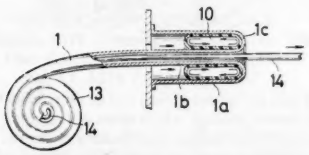
d. means for allowing the cellulosic fiber strip to assume its original, flat, unfolded configuration and winding said strip in such configuration for subsequent utilization.

3,880,058

METHOD FOR TURNING A FLEXIBLE TUBE INSIDE OUT

Eiji Ichioka, Osaka, Japan, assignor to Ashimori Kogyo Kabushiki Kaisha, Osaka-shi, Japan

Filed June 12, 1973, Ser. No. 369,289
Claims priority, application Japan, June 12, 1972, 47-58447
Int. Cl. D06g *3/02*
U.S. Cl. 93—84 TW **3 Claims**



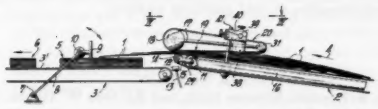
1. A method for turning a flexible tube inside out which comprises the steps of inserting a core material into the flexible tube, passing the tube through the internal surface of a flexible self-rotatable endless double-tubing, evaginating one terminal end of the tube around the evaginated end on the external surface of the double-tubing and causing the evaginated portion of the tube and the core material to move in opposite directions with respect to each other thereby turning the flexible tube inside out.

3,880,059

APPARATUS FOR PILING FLAT WORKPIECES

Friedrich Franz Brockmüller, Lengerich of Westphalia, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany

Filed Apr. 5, 1972, Ser. No. 234,729
Int. Cl. B31b *1/98*
U.S. Cl. 93—93 DP **5 Claims**



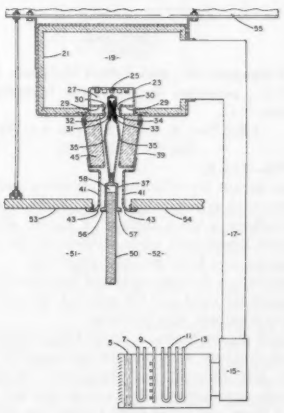
1. Apparatus for piling flat workpieces comprising a continuously moving overlap-formation conveyor belt followed by a piling belt which moves at least when changing piles, said piling belt associated with stop means for arresting and aligning workpieces thereon, in which said stop means is moveable away from said workpieces for conveying the piles away; wherein the improvement comprises: arresting means at the discharge end of the overlap-formation conveyor belt for arresting a plurality of overlapped workpieces, the forward edges of which workpieces have already left the overlap-formation conveyor belt, which arresting means exert pressure against the overlapped workpieces from opposite sides at least during the time the workpieces are stopped, said arresting means comprising pressure rollers and pressure belts which move during pile formation at the conveying speed of the overlap-formation conveyor belt and which develops said pressure which acts from above and below the overlapped workpieces; and wherein at least one of said pressure rollers or pressure belts can be stopped during the changing of piles by immediately acting brake means.

3,880,060

AIR CONDITIONING APPARATUS AND SYSTEM

Carl C. Herb, Camillus, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Sept. 7, 1973, Ser. No. 395,205
Int. Cl. F24f *1/00*
U.S. Cl. 98—40 D **2 Claims**



2. An air terminal to supply treated air simultaneously to two separate areas having a partition member separating the two areas comprising:

a. first diffuser means including first and second members spaced apart to define therebetween a discharge air passage for said terminal, said first and second members

being positioned substantially adjacent to said acoustical tiles; and

b. second diffuser means disposed within said air passage, said second diffuser means having first and second downwardly extending spaced apart leg members defining therebetween an opening for receiving a top portion of said partition member, opposed sides of said leg member having said first and second members of said first diffuser means defining therebetween discharge air passages on opposite sides of said partition member.

3,880,061

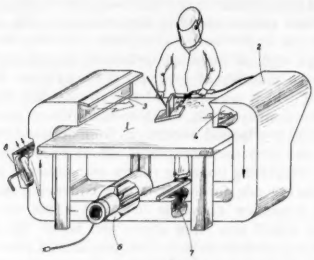
WORK STATION

Charles R. Hensiek, Moscow Mills, and Rayford W. Timms, St. Louis, both of Mo., assignors to American Air Filter Company, Inc., Louisville, Ky.

Filed Oct. 9, 1973, Ser. No. 404,395

Int. Cl. F23j *11/08*

U.S. Cl. 98—115 R **6 Claims**



1. A work station comprising: a work surface; an air duct of C-shaped cross-section with two openings therein, said openings being spaced from and mutually facing each other, the spacing between said openings being disposed at a preselected distance above said work surface; air moving means disposed in said duct whereby air is moved in an endless loop through said duct and across the top of said work surface at a preselected distance above said work surface; and, means for removing contaminants from said air stream.

3,880,062

HOOD

Clifford Culpepper, Jr., and Robert M. Stuck, both of Charlotte, N.C., assignors to Aero-Dyne Manufacturing, Inc., Charlotte, N.C.

Filed Nov. 8, 1973, Ser. No. 413,760

Int. Cl. F23j *11/12*

U.S. Cl. 98—115 K **8 Claims**

1. Hood means for efficiently entraining airborne particulate matter, such as originates from a charbroiler during cooking, from above a work surface of known side-to-side and front-to-rear dimensions while minimizing the volume of air flow required, said hood means comprising:

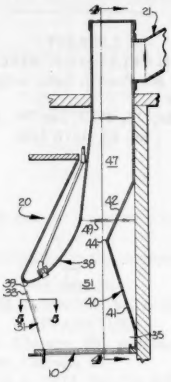
side wall means defining right and left side walls rising from adjacent the right and left sides of the work surface and having front and rear portions,

front wall means having a lower edge portion spaced upwardly from the work surface and generally overlying the front side thereof, said front wall means defining a smooth aerodynamically curving interior forward wall rising from said lower edge portion for assuring streamline flow of air therealong and within said hood means,

said front portions of said side wall means, said lower edge portions of said front wall means and the work surface together defining an entrance face for said hood means through which air flow enters for entraining airborne particulate matter from above the work surface, and

rear wall means defining a rear wall rising from adjacent the rear side of the work surface and having a lower portion directed forwardly toward said front wall means and an upper portion directed rearwardly away from the work surface,

said side wall means, front wall means, rear wall means and work surface together defining an at least substantially



closed path for air flow, said front wall means and said rear wall means lower and upper portions together defining a throat zone within said air flow path, and the throat zone having a cross-sectional flow area less than the cross-sectional flow area of the entrance face.

3,880,063

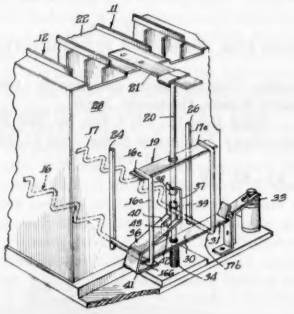
SPRING DRAG DEVICE FOR POP-UP TOASTER

John A. Pestka, Park Ridge, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jan. 21, 1974, Ser. No. 435,281

Int. Cl. A47j *37/08*

U.S. Cl. 99—329 R **10 Claims**



1. In a pop-up toaster having one or more slots formed in a top wall thereof thorugh which slices of bread are lowered to be placed between spaced apart heating elements, the combination comprising: guide post means positioned adjacent said slots, bread-receiving support means extending along the length of the slots to receive the slices of bread and lower the bread to a toasting position, slide means fixedly secured to said bread-receiving support means and slidably secured to said guide post means, spring bias means engageable with said slide means for urging said slide means and said bread-receiving support means upwardly when the bread is toasted, latch means engageable with said slide means for holding said slide means and said bread-receiving support means in a lowered position during toasting of the bread slices, release means operably connected to said latch means to cause said latch

means to release said slide means so that said spring bias means will raise the toasted bread, and upward-motion control means formed of a member having a guide post gripping portion and an arm portion resiliently coupled thereto and extending therefrom to be urged in one direction by said slide means to release said guide post gripping portion from engagement with said guide post during lowering of toast and to be urged in another direction by said slide means to slidably grip said guide post when toast is being raised by said spring bias means, whereby the toasted bread is raised in a uniform smooth manner through the slots formed in the top wall of the toaster.

3,880,064

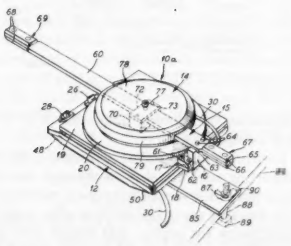
APPARATUS FOR MAKING TORTILLAS AND THE LIKE

Maria Navar Martinez, 7557 N. Loop Road, El Paso, Tex. 79905

Continuation-in-part of Ser. No. 263,091, June 15, 1972, abandoned. This application Feb. 27, 1974, Ser. No. 446,237

Int. Cl. A47j *37/00*

U.S. Cl. 99—349 **15 Claims**



4. A device adapted for preparing flour tortillas from dough patties comprising a base having an electrically heated base plate on the top thereof, a pivot mounting on said base plate, a lever bar securely fastened at one end to said pivot mounting, an electrically heated top plate suspended from said lever bar close to the pivot mounting, said lever bar extending forwardly from said suspended top plate, a first handle on the forwardly projecting end of the lever bar adapted to be pressed downwardly to provide a lever of the second class advantage for developing high pressure flattening of a dough patty between the plates, and a second handle on the lever bar projecting rearwardly from the pivot mounting thereof adapted to be pressed downwardly with the first handle to prevent the base from tipping.

3,880,065

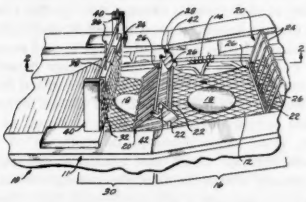
TORTILLA CENTERING DEVICE

Daniel T. Stickle, 5410 Avenue T, Lubbock, Tex. 79412

Filed Feb. 21, 1974, Ser. No. 444,334

Int. Cl. A21b *5/08;* **A47j** *37/12*

U.S. Cl. 99—353 **5 Claims**



1. Apparatus for centering a tortilla in a cooking position on a conveyor, the apparatus including:

a. a flexible belt arranged to present an upwardly facing surface to receive a tortilla;

b. a plunger secured to the belt to be pivotable from an upright to a lower position in which the plunger clamps the tortilla on the belt;

c. means for moving the belt to advance the tortilla;

d. means for moving the plunger from the upright to the lower position; and

e. a resilient obstruction mounted over the belt at a centering station and in the path of the tortilla as the belt moves so the obstruction engages the forward edge of the tortilla and moves it relative to the belt and plunger to center the tortilla under the plunger when the plunger is moved to the lower position.

3,880,066

APPARATUS FOR SHELLING VEGETABLE PRODUCTS

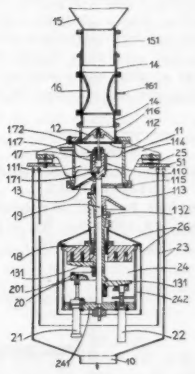
Gabriel Ruget, Saint-Etienne, France, assignor to Creusot-Laire, Paris, France

Filed Aug. 14, 1973, Ser. No. 388,165

Claims priority, application France, Aug. 30, 1972, 72.30727

Int. Cl.² A23n *7/00;* **B07b** *4/00*

U.S. Cl. 99—468 **6 Claims**



1. Apparatus for shelling vegetable products having an envelope containing at least one kernel by the sequential steps of placing said product in a gaseous atmosphere; increasing the pressure of said atmosphere to a super-ambient value; maintaining said pressure at said super-ambient value for a given period of time; and rapidly reducing said pressure from said super-ambient value; the apparatus comprising a chamber having a charging orifice closable in a fluid-tight manner by a charging valve member and a discharge orifice closable in a fluid-tight manner by a discharge valve member, the arrangement being such that with said vegetable products in the chamber and the pressure of the gaseous atmosphere of the chamber at said super-ambient value, the opening of the discharge orifice by movement of the discharge valve member causes said rapid reduction in said gas pressure and the ejection of said product from the chamber by the expanding gaseous atmosphere and spaced elastic cylindrical skirts coaxial with said chamber receiving and braking the products from the discharge valve member.

3,880,067

EQUIPMENT FOR TRANSPORTING AND TREATING MEAT

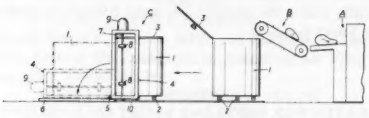
Louis Adolph Hoffman, Gerasdorferstrasse 131, A-1210 Vienna, Austria

Filed Oct. 25, 1973, Ser. No. 409,643

Claims priority, application Switzerland, Oct. 26, 1972, 15692/72

Int. Cl. B65d *1/00*

U.S. Cl. 99—472 12 Claims



1. An equipment for transporting and treating materials suitable to be filled into containers, comprising:

at least one container having the shape of a rotary body and having its one front end closed and adapted to be transported on a roller means, the other front end of said container being provided with a cover lid,

a movement tratment station having at least one supporting means for supporting said container,

carrying rollers for said container,

a drive means for driving at least one of said carrying rollers, each of said supporting means being arranged for angular movement around a swivelling axis from a container engaging position into a container operating position, wherein in said container operating position the container is engaged by said supporting means and rests on said carrying rollers so that said container can be rotated around the container axis by means of said driven carrying roller.

3,880,068

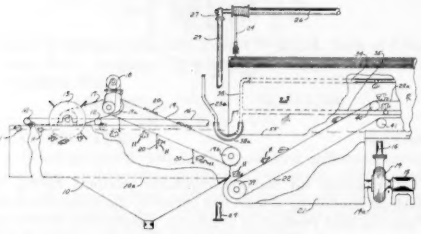
APPARATUS FOR WASHING AND BLANCHING OF VEGETABLES

Richard J. Goodale, P.O. Box 268, Watsonville, Calif. 95076

Filed May 18, 1973, Ser. No. 361,828

Int. Cl. A23n *9/00*

U.S. Cl. 99—478 6 Claims



1. In apparatus for blanching products such as vegetables, the combination comprising a first tank having water for immersing vegetables placed therein, a blanching chamber having wall structure extending over at least a portion of said tank, selected lower portions of said wall structure being immersed in the water in said tank, means conveying the washed vegetables from said tank into said chamber, means supplying heated fluid to said blanching chamber, said conveying means moving said vegetables through the heated fluid atmosphere in said chamber, a second tank having water therein, said blanching chamber having wall structure extending over at least a portion of said second tank, other selected lower portions of said wall structure being immersed in the water in said second tank, said conveying means moving said vegetables from the heated fluid atmosphere in said blanching chamber into the water in said second tank, means to circulate water from the second tank to the first tank such that a natural flow of water with the product movement occurs from the first tank towards the chamber and from the chamber towards the second tank to enhance the product flow, and means including said wall structures immersed in the water in said tanks substantially closing said chamber thereby reducing loss of heat therefrom.

3,880,069

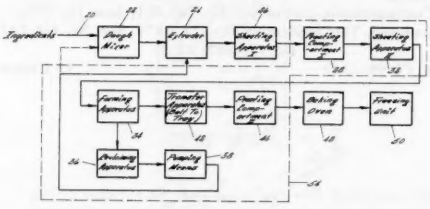
APPARATUS FOR FORMING DOUGH SHELLS

Roy V. Moline, Duluth, Minn., assignor to Jeno's, Inc., Duluth, Minn.

Filed July 29, 1971, Ser. No. 167,405

Int. Cl. A21c *11/22*, *13/00*

U.S. Cl. 99—483 15 Claims



15. Apparatus for forming dough sections from a sheeted dough web comprising

a first proofing compartment including a first conveyor for transporting said dough web through said first proofing compartment for a predetermined proofing interval

a dough sheeting means positioned after said first proofing compartment for urging said dough web to a predetermined thickness and width as said dough web is transported by said first conveyor;

a forming means for cutting dough sections from said dough web of predetermined thickness and width as said dough web is transported therepast by said first conveyor;

means for separating said dough section from the remaining trimmings of said dough web; and

a second proofing compartment positioned after said separating means for transporting on a second conveyor said dough sections through said second proofing compartment for a predetermined resting interval.

3,880,070

AUTOMATIC STACKING MACHINE FOR BARS AND THE LIKE

Irving Leonard Kaplan, Pepper Pike, Ohio, assignor to Carl Krasny & Associates, Inc., Cleveland, Ohio

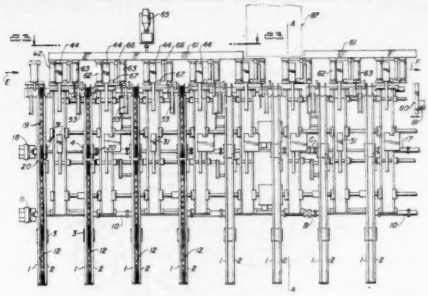
Division of Ser. No. 337,649, March 2, 1973. This application Dec. 27, 1973, Ser. No. 429,033

Int. Cl. B65b *13/18*

U.S. Cl. 100—7 1 Claim

1. In a machine of the character described, the combination of first stops, means for traversing bars to said stops to provide a plurality of such bars in compact side-by-side relation constituting a charge, second stops disposed downstream of said first stops, means for traversing said charge to said second stops for further compacting of said bars, carriage means having an orbital movement in which the charge is lifted from said first means, moved forwardly toward said second means, deposited onto said second means, and then returned to their initial position, third stops disposed downstream of said second stops, and against which said charge is positioned by said second means, means disposed downstream of said third stops for receiving successive charges of said bars in superimposed relation to provide a bundle of said bars, means for bodily transferring said charge from said second traversing means and into said charge-receiving means, said last-named trans-

ferring means comprising carriages independent of said first carriages and having an orbital movement in which the charge is lifted from said second transversing means, moved forwardly toward said charge-receiving means, deposited in said charge-receiving means, and then returned to their initial position, said charge-receiving means consisting of a cradle having rolls for moving said bundle in a direction normal to



the direction in which the charges were moved in the course of being deposited in said charge-receiving means, said cradles including spaced sets of upright side rolls defining the width of the bundle, one of said sets being adjustable relatively to the other to vary the space between said sets and therefore the width of the bundle, and means positioned longitudinally of said cradle for automatically strapping or tying the superimposed charges into a unitary bundle of bars.

3,880,071

MACHINE FOR THE TYING OF PACKAGES

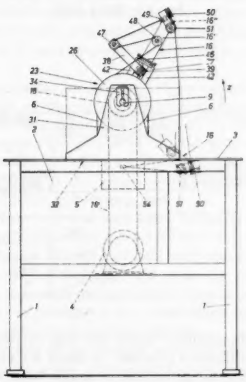
Hans Hugo Buttner, Mettmann, Germany, assignor to Firma Buttner Kommanditgesellschaft Maschinenfabrik, Gruiten, Germany

Filed May 23, 1973, Ser. No. 363,270

Claims priority, application Germany, May 27, 1972, 2225908

Int. Cl. B65b *13/10*

U.S. Cl. 100—27 **4 Claims**



1. An apparatus for tying a package by slinging a tying element therearound, said apparatus comprising;

a support for a package to be tied;

a tying arm swingably mounted on said support for slinging said element about said package from an end of said arm;

means defining a swing axis for said arm on said support;

a supply drum mounted on said support with its axis coinciding with said swing axis for feeding said element to said arm;

a brake limiting rotation of said supply drum;

an after-tension device on said arm retaining and unwound length of said element thereon intermediate said drum and said end of said arm; and

means operatively connecting said device with said drum for controlling said brake in response to the tension of said element at said device.

3,880,072

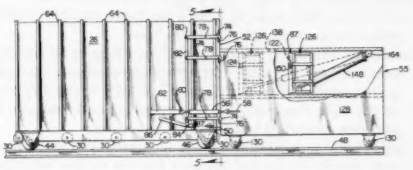
COMBINATION CONTAINER AND MATERIAL COMPACTING APPARATUS

Thomas E. Ord, 2410 Cook St., Denver, Colo. 80216

Filed Sept. 8, 1969, Ser. No. 856,067

Int. Cl. B30b *15/06*

U.S. Cl. 100—100 **3 Claims**



1. A combination container and load material compacting apparatus therefor comprising: a receptacle having a charging opening therein; a compactor for compacting material into said receptacle; a combination interchangeable door for said charging opening and compactor plate for said compactor; first locking means for locking said combination door and compactor plate in said charging opening; second locking means for locking said plate to said compactor; said first and second locking means operating so that as one moves to its locking and unlocking positions the other moves to its unlocking and locking positions, respectively; said first locking means including locking pins operated by a linkage system and said second locking means including a slotted shaft on said compactor, a slotted tube on said compactor plate and a knife latch adapted to move into locking position in said slots when they are in register and to unlocking position out of said slots.

3,880,073

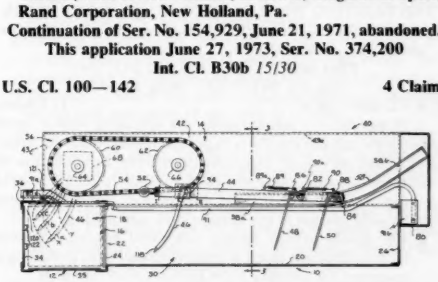
FEEDING MECHANISMS OF A HAY BALER

Harry C. Eberly, Narvon; Thomas B. Moody, and George Yatcilla, both of New Holland, all of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Continuation of Ser. No. 154,929, June 21, 1971, abandoned. This application June 27, 1973, Ser. No. 374,200

Int. Cl. B30b *15/30*

U.S. Cl. 100—142 **4 Claims**



1. In a hay baler, the combination comprising:

a fore-and-aft horizontally extending bale chamber having a feed opening in a vertical sidewall thereof and a slot in a top wall thereof, said slot communicating with said opening,

a plunger reciprocal in said chamber and past said opening and slot,

a hay receiving platform extending laterally from said opening,

a support bar above said chamber and platform and axially extending in the direction of extent of the platform, said support bar having an inner end proximate to said chamber and an outer end remote therefrom,

a pair of laterally spaced sprockets rotatable in a vertical plane perpendicularly to the fore-and-aft extension of said bale chamber,

means supporting one of said sprockets over said bale chamber and the other of said sprockets over said platform,

an endless chain extending around said sprockets,

power means connected to at least one of said sprockets to drive said one sprocket and said chain,

means connecting said inner end of said support bar to said chain,

means supporting said outer end of said support bar,

a set of feed fingers each having an upper straight portion and a lower end curved portion,

means for adjustably mounting the feed fingers on the support bar with the upper straight portion of said feed fingers extending downwardly and inwardly in the direction of the bale case and the lower tips of said end curved portions extending towards said bale case,

said adjustable mounting means including a bracket movable axially along said support bar for setting said feed fingers over a range of positions, said adjustable mounting means further including clamping means on opposite sides of said bracket and pivotally movable with respect to said bracket for clamping said feed fingers on said bracket over a range of angular positions with respect to the axial extent of said support bar,

whereby when the support bar is moved by said chain, the feed fingers will initially move parallel to said platforms and into the bale chamber through said opening and slot as the portion of said chain connected with said bar moves between said sprockets and the feed fingers will then move upwardly along any one of a number of arcuate paths depending upon the setting of said adjustable mounting means with said curved end portions of said fingers carrying hay into the upper corner of the bale chamber opposite the opening and generally vertically out of said bale chamber through said slot as said chain portion moves about said one sprocket supported over said bale chamber.

3,880,074

APPARATUS FOR AUTOMATICALLY POSITIONING AND PRINTING WITH RESPECT TO AN INDEX MARK

Richard L. Seifert, Narberth, Pa., assignor to Optical Apparatus Co., Inc., Ardmore, Pa.

Filed Jan. 12, 1972, Ser. No. 217,146
Int. Cl. B41f *17/22*; **B65g** *47/24*
U.S. Cl. 101—38 A **19 Claims**

1. Apparatus for automatically silk screening indicia upon transparent tubular members in precise registration with reference marks previously incorporated thereon as a measure of calibrated internal capacity, each of said reference marks being in the form of an opaque short arcuate line on the outer tubular wall normal to the tubular axis, comprising

a silk screen stencil having calibrated spaced openings therein disposed along a predetermined axis, including a squeegee for pressing paint through such openings,

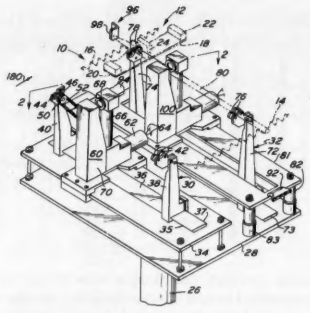
conveyor menas for transporting the tubular members so that the axes thereof are arranged in substantially parallel disposition with the axis of the stencil openings,

first photoelectric means interposed at a first station in the path of travel of the tubular members,

manipulating means for rotating said tubular members in a predetermined direction at the first station until the arcuate reference line on such tubular member intercepts the first photoelectric means and orients the arcuate reference line in a predetermined direction,

second photoelectric means interposed at a second station in the path of travel of said tubular members,

second manipulating means for shifting the tubular members axially within said conveyor means until the reference line intercepts said second photoelectric means so



that the reference mark on such tubular member is displaced to a position in registration with the calibrated spaced openings of the stencil,

carriage means for relatively moving one tubular member at a time into contact with said stencil, and

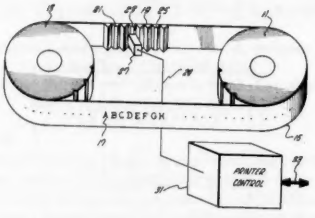
means for drawing said stencil over the tubular member in registered contact therewith so that the squeegee forces paint through the calibrated openings and imprints said tubular member.

3,880,075

AUTOMATIC CHAIN IDENTIFICATION METHOD AND APPARATUS

Duane E. Bovett, Claremont, and Robert E. Bohn, Pasadena, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 26, 1973, Ser. No. 427,477
Int. Cl. B41j *1/20*
U.S. Cl. 101—111 **10 Claims**



1. In a chain printer wherein the type carrier has a font set thereon and utilizes a plurality of teeth for engaging driving mens, apparatus for generating a unique binary code identifying the font set on the carrier comprising:

a predetermined plurality of flattened teeth located on said type carrier so as to be representative of said unique binary code;

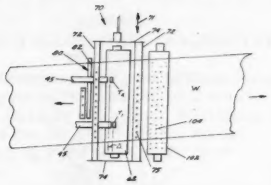
sensing means adjacent said type carrier for sensing the flattened teeth when said type carrier is being driven; and means responsive to said sensing means for generating a binary code representative of the sensed flattened teeth.

3,880,076

WEB REGISTRATION WITH WEB PULL-BACK AND SKEWING MEANS

James A. Black, 13700 Sparata Ave., Kent City, and Harry Russell Farwell, Cedar Springs, both of Mich., assignors to said James A. Black, by said Harry Russell Farwell

Filed Oct. 11, 1972, Ser. No. 296,633
Int. Cl. B41f 15/24, 13/04
U.S. Cl. 101—115 27 Claims



1. A printing press for printing on a web having registration tabs at spaced intervals along its length, said apparatus comprising:

advancing means for advancing a web of printing material into a printing station such that a registration tab thereon is positioned slightly beyond a predetermined registration position;

guide means comprising a guide arm having an end engaging the upper surface of said web and defining a reference edge at a predetermined location in said printing station for engaging an edge of said tab during rearward motion of said web during a registration portion of each cycle of operation; and

means engaging a single surface of said web in an area adjacent said registration tab for drawing said web rearwardly to move said registration tab into engagement with said reference edge of said guide arm during sid registration portion of each operating cycle and for securely holding said tab against said reference edge until said web is advanced during printing thereby providing registration of said web in said printing station and in a longitudinal direction.

11. A printing press for printing on web stock comprising: infeed means for advancing web stock into a printing station including a printing pattern and a back-up cylinder;

means for registering a section of said web stock in said printing station between said pattern and said cylinder skewed relative to the longitudinal axis of said printing station and prior to printing; and

means for advancing said web stock between said cylinder and said pattern to form a print on said web stock section whereby due to skewing of said web stock section said section advances through said printing station during printing in a predetermined lateral direction.

16. A method of printing a web comprising the steps of:

feeding said web into a printing station;

skewing a section of the web in said printing station at a predetermined angle relative to the longitudinal axis of said printing station;

positioning a back-up cylinder in contact with one side of said web section and a printing pattern in contact with said web section on an opposite side thereof; and

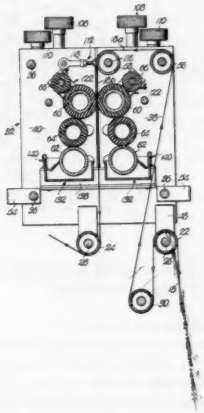
moving the web over the back-up cylinder to form a print whereby due to said skewing step, said web section moves slightly laterally through said printing station in a predetermined direction.

3,880,077

TINTING UNIT FOR OFFSET PRINTING PRESS

Donald A. Glaser, and Agustin Mena, both of Emporia, Kans., assignors to Didde-Glaser, Inc., Emporia, Kans.

Continuation of Ser. No. 248,698, April 28, 1972, abandoned.
This application Aug. 29, 1973, Ser. No. 392,678
Int. Cl. B41f 5/04; B05c 9/04
U.S. Cl. 101—219 6 Claims



1. In combination with a printing press having a web of paper stock associated therewith, means for advancing the web through the press and at least one printing station, an in-line paper web tinting unit comprising:

a pair of opposed, spaced-apart supports mounted on the press on opposite sides of the path of travel of said web adjacent said printing station;

a pair of applicator rolls each having a continuous, web-tinting periphery;

means mounting said rolls on said supports for free rotation thereon about their longitudinal axes in spanning relationship to the supports and for lateral movement toward and away from contacting disposition to locations in spaced relationship;

means adjustably squeezing said rolls together along their lengths and their peripheries pressing against opposite faces of said web for driving of the applicator rolls solely by movement of the web therebetween;

means for continuously supplying a sufficient quantity of tinting fluid to said rolls to completely and evenly tint both faces of the paper simultaneously with said fluid as the web is pulled by said advancing means to thereby effect said web drive of the rolls in unison;

said fluid supply means for each applicator roll respectively including an open top fluid reservoir and a rotatable pickup roll adapted for partial submersion in tinting fluid contained in a corresponding reservoir;

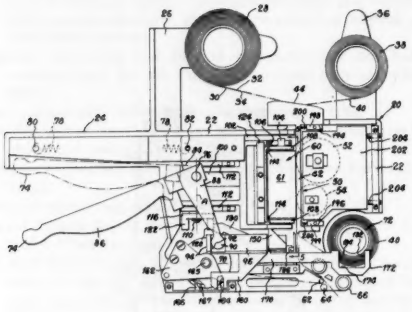
separate elongated wiper means adjacent opposed ends of each of the pickup rolls and extending inwardly from the outermost ends thereof a substantial distance toward the central area of a respective pickup roll; and

means mounting the wiper means for independent movement relative to a corresponding pickup roll and allowing selective adjustment of the spacing thereof longitudinally of the same toward and away from the proximal surface of a corresponding pickup roll to permit selective control of the amount and location of fluid picked up by each of said pickup rolls.

3,880,078
HAND-HELD LABEL MARKING DEVICE

Pierre A. Pelet, Mill Valley, Calif., assignor to Dymo Industries, Inc., Eneryville, Calif.

Filed Oct. 18, 1972, Ser. No. 298,661
Int. Cl. B41f *1/08, 1/38, 1/44*
U.S. Cl. 101—273 **28 Claims**



1. A hand-held label marking device for printing information on labels, said device comprising:

a frame;

a printing station on the frame;

print means located at said printing station;

means for locating a label at the printing station in juxtaposition with the print means;

means for locating a printing medium at the printing station in juxtaposition with the label and the print means;

an actuating member;

means mounting the actuating member upon the frame for advancing movement from a first position to a second position, in response to the application of an actuating force to the actuating member, and for retracting movement from the second position to the first position;

a platen;

means mounting the platen on the frame for movement along a path of travel extending between a first location and a second location spaced from the first location, said path of travel being so disposed relative to the print means at the printing station that the platen traverses the printing station and urges the label, the print means and the printing medium together at the printing station for printing a label during each movement of the platen from either one to the other of said first and second locations; and

coupling means coupling the actuating member with the platen such that the actuating force is transmitted to the platen and the platen moves through a traversing movement along said path of travel from either one to the other of said first and second locations only in response to movement of the actuating member as a result of the application of said actuating force during said advancing movement and remains at the other of said first and second locations during said retracting movement of the actuating member.

3,880,079
MULTICOLOR STAMP

Joseph Klapholz, 3950 Blackstone Ave., New York, N.Y. 10471

Continuation-in-part of Ser. No. 397,894, Sept. 17, 1973, Pat. No. 3,839,955. This application May 7, 1974, Ser. No. 467,673
Int. Cl. B41k *1/42*
U.S. Cl. 101—334 **10 Claims**

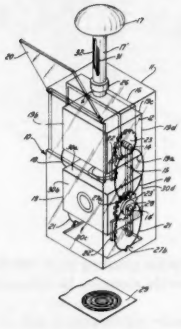
1. A stamp for printing multicolor designs, comprising:

a downwardly open housing;

an upper block and a lower block vertically slidable in said housing and mounted for independent rotation about respective horizontal axes, said upper block being a prism whose sides are provided with differently colored ink pads, said lower block being a prism whose sides form typefaces constituting mutually complementary components of a design to be printed on an underlying substrate;

spring means on said housing normally maintaining said blocks in an elevated spaced-apart position;

actuating means on said housing coupled with said upper block for depressing same into contact with said lower block and thereupon jointly depressing both blocks



against the force of said spring means whereby an upper typeface on said lower block contacts an ink pad on a lower typeface on said upper block while a lower typeface on said lower block contacts the underlying substrate;

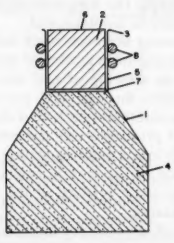
one-way drive means on said housing effective upon release of said actuating means and upward movement of said blocks by said spring means to rotate each block about its axis for confronting another typeface with another ink pad; and

unidirectionally effective retaining means on said housing coupled with said actuating means for preventing said spring means from elevating said upper block upon a partial descent thereof from a normal position.

3,880,080
BOOSTER FOR EXPLOSIVE BLASTING AGENTS

Melvin A. Cook, Salt Lake City, Utah, assignor to Ireco Chemicals, Salt Lake City, Utah

Filed Apr. 6, 1973, Ser. No. 348,767
Int. Cl. F42b *3/00*
U.S. Cl. 102—24 R **14 Claims**



1. A water-resistant booster for detonating cap-insensitive explosive blasting agents comprising

a. a container having a main body portion and an elongated neck portion of smaller-cross-sectional area than the

main body portion and having an opening at the end of the neck portion opposite main body portion,

b. an at least partially water-soluble detonating fuse-insensitive explosive charge within the main body portion of said container, and

c. a water-insoluble detonating fuse-sensitive explosive charge substantially wholly contained within the neck portion of said container and having an outer peripheral surface which conforms to the inner surface of the neck portion throughout at least most of the charge's outer peripheral surface to provide close contact therewith and thereby to allow said charge to plug said container.

3,880,081
HIGH BORON ALLOY STEEL FRAGMENTATION MUNITION

Paul V. Riffin, Lexington, and Ernest N. Kinas, Newton, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 19, 1973, Ser. No. 426,265
Int. Cl. F42b *13/48;* **C22c** *39/54*
U.S. Cl. 102—67 **4 Claims**

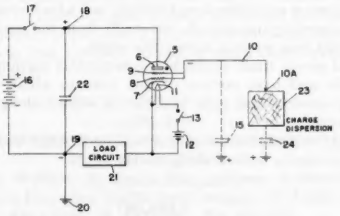
1. In a high explosive fragmentation munition the improvement, comprising a fragmentable shell body made of an alloy steel consisting essentially of the following elements:

	Weight %, about:
carbon	.3 to .7
boron	.05 to .5
manganese	1.25 to 2.0
phosphorus	.05 to .2
silicon	0 to 2.5
iron and incidental impurities	remainder.

3,880,082
ELECTRICALLY-CONTROLLED TRIGGERING CIRCUIT FOR FUZES AND THE LIKE

Paul Chernoff, Adelphi, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 28, 1966, Ser. No. 583,495
Int. Cl. F42b *11/00*
U.S. Cl. 102—70.2 R **4 Claims**



1. An electrostatically-controlled triggering circuit for electronic devices comprising in combination,

a gas thyratron tube having an anode, a cathode and at least one control electrode interposed therebetween,

a storage capacitor connected in circuit between the anode and cathode,

means providing a load circuit interposed between the said capacitor and the cathode for receiving the discharge of said capacitor through the thyratron upon firing,

a charging circuit connected with said capacitor,

means in said charging circuit for applying to said capacitor a charge at least equal to the discharge voltage of said thyratron,

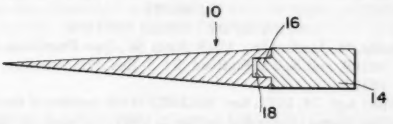
a free-floating insulated electrostatic-coupling conductor connected with said control electrode for collecting therefrom negative electrons driven off from the cathode in operation and received thereby to develop a sufficient negative charge and bias and resultant relatively-high plate-to-cathode impedance to preclude plate-to-cathode discharge, and

means providing a conductive terminal connection for said conductor adapted to contact objects in operation and thereby dissipate said negative charge and bias and increasingly bias said control grid in a positive direction for triggering the plate-to-cathode discharge and thereby applying the discharge of the storage capacitor to the load circuit.

3,880,083
BIMETALLIC MASS STABILIZED FLECHETTE

Saul Wasserman, Rockaway, N.J.; Robert S. Salzman, Manhattan, N.Y., and Walter C. O'Keefe, Landing, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 19, 1967, Ser. No. 642,648
Int. Cl. F42b *11/02*
U.S. Cl. 102—92.4 **9 Claims**



1. A mass stabilized flechette for employment in warheads and explosive launch ejection systems comprising

a forward solid cone-shaped portion comprised of a base and nose portion,

said base portion defining a hollow receptacle,

a rearward solid body portion having a forward and rearward end,

said forward end having an integral member which is axially aligned with and adapted to be inserted and secured in said hollow receptacle,

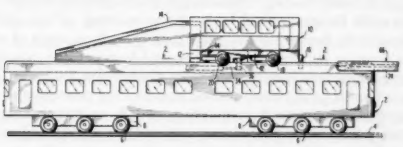
said cone-shaped portion comprising about 86% of the total weight of the flechette,

said body portion being 2.77 calibers in length which in conjunction with said cone-shaped portion results in a rearward aerodynamic center of pressure.

3,880,084
REMOVABLE MODULE TRAIN AND TRACKWAY THEREFOR

Richard Denenburg, 4007 Telephone Rd., Houston, Tex. 77017

Filed Mar. 11, 1974, Ser. No. 449,985
Int. Cl. B61k *1/00*
U.S. Cl. 104—20 **7 Claims**



1. A railway system, comprising a ground-level trackway,

a car having supporting wheels rollingly engaging said ground-level trackway,

a module engageable onto the top of said car,

said module having supporting wheels on opposite sides thereof shiftable between inwardly retracted position

wherein they lie inwardly of the sides of said car and outwardly extended position in which they project outwardly beyond the sides of the car,

mechanism, including a mechanical power source on said car, for shifting said module wheels between said positions,

an elevated trackway having at least opposite end portions overlying a portion of the ground-level trackway and spaced apart by a length representing only a portion of the length of said ground-level trackway,

said elevated trackway having rails extending along the length thereof, said rails being laterally spaced from one another a distance corresponding to the distance between the wheels on the opposite sides of the module when the latter are extended outwardly and being engageable by said wheels and the opposite end portions being disposed at a level to be engaged by the outwardly extended wheels on the module when the latter is engaged on the car, an intermediate portion elevated higher than the opposite end portions and substantially higher above the ground level trackway than the top of a module engaged on said car, and inclined portions connecting said opposite end portions and said intermediate portion.

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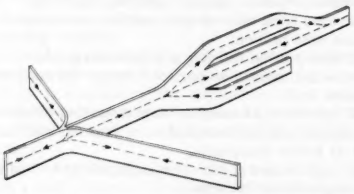
TRANSPORTATION SYSTEM

Justin M. Jacobs, Jr., 1245 Jones St., San Francisco, Calif. 94109, and Neil S. Stafford, Rt. 3, Box 355, San Jose, Calif. 95121

Filed Apr. 28, 1972, Ser. No. 248,735The portion of the term of this patent subsequent to May 2, 1989, has been disclaimed.

Int. Cl. B61b *13/02*

U.S. Cl. 104—88 **30 Claims**



1. A transportation system having non-moving connecting switch or merge sections comprising a main guidebeam, a first spaced apart guidebeam, a second spaced apart guidebeam, all of said guidebeams having an inwardly facing vertical upper guide running surface, an outwardly facing vertical lower guide running surface and a substantially horizontal support running surface formed thereon, a connecting guidebeam switch or merge section extending between said main guidebeam and each of said spaced apart guidebeams, first non-moving connecting running surfaces on said switch or merge section between said main guidebeam and said first spaced apart guidebeam, said first running surfaces comprising an inwardly facing vertical upper guide running surface, an outwardly facing vertical lower guide running surface and a substantially horizontal support running surface, each of said first running surfaces being connected between the counterpart running surfaces of said main guidebeam and said first spaced apart guidebeam, second non-moving connecting running surfaces on said connecting switch or merge section between said main guidebeam and said second spaced apart guidebeam, said second running surfaces comprising an inwardly facing vertical upper guide running surface, an outwardly facing vertical lower guide running surface and a substantially horizontal support running surface, each of said second running surfaces being connected between the counterpart running surface of said main guidebeam and said second spaced apart guidebeam, a rack for cantilevering on a guidebeam having wheels for use in moving on the running surfaces of said guidebeams, said wheels including a support wheel for running on said support surface, and upper and lower guide wheels for running on said upper and lower guide surfaces, and movable means on said rack for selectivity moving on one of said connecting running surfaces to selectively move said rack through said switch or merge section between said main guidebeam and one of the said spaced apart guidebeams.

3,880,086

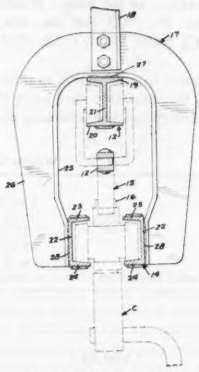
POWER AND FREE CONVEYOR TRACK SECTION

Azizul H. Khondker, Detroit, Mich., assignor to American Chain & Cable Company, Inc., New York, N.Y.

Filed Mar. 26, 1973, Ser. No. 345,095

Int. Cl. E01b *25/22*

U.S. Cl. 104—94 **11 Claims**



1. In a power and free conveyor track section, the combination comprising

a power track along which a conveyor is adapted to be moved,

a free track for supporting carrier beneath the conveyor,

longitudinally spaced yokes extending between said tracks, each said yoke having a cross section that includes a base portion extending longitudinally and a transverse portion extending transversely outwardly from the base portion, said base portion having free edges,

said power track comprising a horizontal portion engaged by said base portion of said yoke to which said base portion of said yoke structure is welded along said free edges,

said free track including a vertical portion to which the base portion is welded along its free edges.

3,880,087

MATERIAL HANDLING APPARATUS

Karl A. Pamer, Chagrin Falls, Ohio, assignor to McNeil Corporation, Akron, Ohio

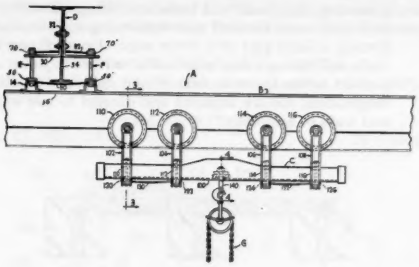
Division of Ser. No. 261,529, June 9, 1972, Pat. No. 3,827,366. This application Nov. 12, 1973, Ser. No. 415,152

Int. Cl. E01b *25/14*

U.S. Cl. 104—123 **11 Claims**

1. In material handling apparatus having a first member providing an abutment surface, a second member spaced from said first member and providing an abutment surface opposed to said abutment surface of said first member and a connection between said first member and said second member comprising: at least one resilient, flexible, ring-like, closed vessel having liquid therein between said abutment surfaces and

means on at least one of said members encircling said vessel to substantially enclose the same whereby said second member is supported by said first member and has limited universal movement relative to said first member and expansion of said vessel is limited.

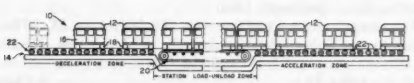


3,880,088

VEHICLE CONTROL SYSTEM AND METHOD

Douglas Grant, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 345,156, March 26, 1973, abandoned. This application July 23, 1973, Ser. No. 381,821
Int. Cl. B61b *13/12*
U.S. Cl. 104—168 **15 Claims**



1. A speed control system for vehicles traversing a pathway comprising:

a. a plurality of polyphase electric motors in relative spaced apart position along the pathway;

b. means coupled to said motors to rotate in speed synchronism therewith and positioned within the pathway to provide driving engagement with said vehicles;

c. a source of three-phase variable-frequency control signals; and

d. circuit means operatively connecting said motors to the source of control signals such as to connect said motors in sequence to the source as a vehicle advances along the pathway and provide a changing speed characteristic to the vehicle

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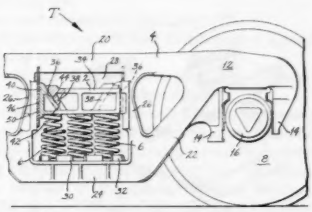
3,880,089

RAILWAY TRUCK SIDE FRAME AND WEAR PLATE CONSTRUCTION

George O. Wallace, St. Louis, Mo., assignor to Diversified Industries, Inc., a/k/a Scullin Steel Company, St. Louis, Mo.

Filed Mar. 29, 1974, Ser. No. 456,068
Int. Cl. B61f *5/12*, *5/50*; **F16d** *69/04*
U.S. Cl. 105—197 DB **14 Claims**

1. In a railway truck including an elongated side frame provided with a bolster window and having a spring seat at the bottom of the bolster window, vertical backing surfaces extended transversely of the side frame at the sides of the bolster window and a hollow compression member extending over the bolster window; wear plates located against and positioned by the backing surfaces so that the wear plates are also vertical and extend transversely of the side frame; a bolster projected into the bolster window and having inclined walls located opposite the wear plates; springs between the bolster and the spring seat for supporting the bolster on the side frame; and wedge-shaped friction blocks urged upwardly between and being engaged with the inclined walls on the bolster and the vertical wear plates on the side frame for snubbing the bolster when the bolster moves downwardly; the improvement comprising: a lower wall on the compression member having apertures located directly above the wear plates and opening into



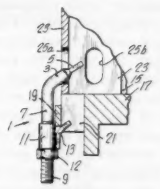
the hollow interior of the compression member, and tongue-like extensions on the wear plates projecting upwardly into the apertures and hollow interior of the compression member, the tongue-like extensions being engaged with the upper compression member such that the wear plates are unable to drop downwardly when against the backing surfaces.

3,880,090

DEVICE FOR SECURING CONTAINERS TO CARRIERS

Jean Duclos, 740 Des Milles Ile est., St. Therese, Quebec, Canada

Filed Feb. 20, 1973, Ser. No. 333,446
Int. Cl. B60p *7/10*; **B61d** *45/00*
U.S. Cl. 105—366 C **5 Claims**



1. A device for securing a container to a vehicle platform: said container comprising an aperture in a vertical side surface at a bottom edge thereof;

said vehicle platform comprising a top surface and side edges and a side rail below said top surface and spaced from said side edges;

said device comprising:

a rod member having a first portion and a second portion; said first portion being at an angle to said second portion; means at the end of said first portion remote from said second portion for locking the rod member to the container through the aperture thereof;

a sliding member for slidingly fitting over said second portion;

said sliding member comprising hook means for engaging the side rail of the platform whereby to secure the rod to the platform;

and means for retaining said sliding member on said rod member;

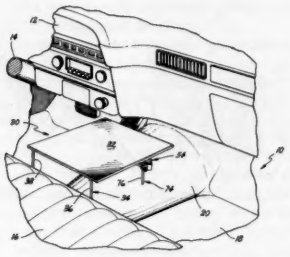
wherein the angle between said first and said second portion is 45° to 75°;

and wherein said locking means comprises a rectangular plate connected to said first portion at a broad side of said plate.

3,880,091
CAR SNACK TABLE

George W. Heinonen, 3414 Zane Ave. North, Minneapolis, Minn. 55422

Filed Feb. 14, 1972, Ser. No. 226,097
Int. Cl. A47b 23/00, 37/00
U.S. Cl. 108—44 3 Claims



1. A snack table for use over the driveshaft hump in the floor of a vehicle comprising a rigid panel member, a first generally U-shaped rod member having a transverse portion and a pair of straight elongated portions, said elongated portions being integrally connected at only one end thereof to the opposite ends of said transverse portion and extending generally perpendicularly therefrom with a spacing therebetween so as to provide laterally spaced free ends remote from said connected one ends for engaging the vehicle floor to either side of the driveshaft hump, said transverse portion being hinged to said panel member near the edge thereof to be located toward the seat of the vehicle, a second generally U-shaped rod member having a transverse portion and a pair of straight elongated portions, said elongated portions of said second U-shaped member being integrally connected at one end thereof to the opposite ends of said transverse portion of said second U-shaped member and extending generally perpendicularly therefrom, the transverse portion of said second U-shaped member being hinged to said panel member near the edge thereof to be located away from the vehicle seat, said elongated portions of said second generally U-shaped rod member having a lesser spacing than the elongated portions of said first U-shaped member, a third generally U-shaped rod member having a transverse portion and a pair of straight elongated portions, the elongated portions of said third U-shaped member being integrally connected at one end thereof to the transverse portion of said third U-shaped member and the elongated portions of said third U-shaped member having a lesser spacing therebetween than the elongated portions of said second U-shaped member, and means adjustably clamping the elongated portions of said third U-shaped rod member to the elongated portions of said second U-shaped rod member in the same plane with each other to level said panel member.

3,880,092
RIGID FOAMED PLASTIC PALLET

Howard Arthur Seeber, Larkspur, Colo.; Joseph Marchisen, Heightstown, and Edward John Brozena, Branchburg, both of N.J., assignors to Johns-Manville Corporation, New York, N.Y.

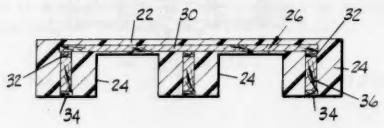
Filed July 21, 1972, Ser. No. 273,906
Int. Cl. B65d 19/44, 19/00
U.S. Cl. 108—55 3 Claims

1. A rigid foamed plastic pallet comprising:

a. a deck, said deck having an upper surface and a lower surface, and said deck having end walls and side walls extending between said upper and lower surfaces,

b. runners integral with said deck, said runners projecting downward from the lower surface of said deck and extending generally parallel with respect to said side walls of said deck, and

c. elongate reinforcing members comprising wood and extending along said end walls and being embedded in said deck, with each of said reinforcing members reinforcing at least part of a lower edge of one of said end walls and having a first longitudinal surface adjacent and parallel to the lower surface of said deck and a second longitudinal surface adjacent and parallel to one of the end walls of said deck;



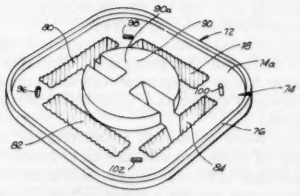
d. at least some of said runners having pairs of recesses in their undersides for receiving forks of a forklift truck; and

e. at least some of said runners also being provided with elongated reinforcing members, comprising wood, said reinforcing members being embedded in an underside of said runners, said reinforcing members extending longitudinally with respect to said runners, and said reinforcing members each having a longitudinal surface at said underside of one of said runners.

3,880,093
PALLET

Walter E. Schott, Cincinnati, Ohio, assignor to Schott Industries, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 176,581, Aug. 31, 1971, abandoned. This application June 1, 1973, Ser. No. 366,065
Int. Cl. B65d 19/44
U.S. Cl. 108—55 4 Claims

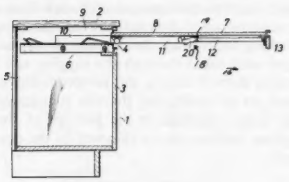


1. A molded nestable pallet for receiving and supporting a coil of material, said pallet comprising a generally square four-sided deck, four leg members formed in said deck and extending therebelow to maintain said pallet deck in parallel spaced relationship with the surface upon which said leg members rest, areas beneath said deck for approach of said pallet from any one of said four sides thereof by lifting means and for engagement of said pallet by said lifting means, each of said areas being located between one of said leg members and the adjacent side of said deck, a single substantially circular centering member extending above said deck and being integral and one piece therewith, said centering member being so sized as to enter the hollow center of a coil to be supported on said pallet deck and being so located as to position said coil centrally of said deck and to prevent relative movement of said coil and said pallet, two opposite ones of said leg members each having a lateral extension, said lateral extensions being diametrically opposed, each of said lateral extensions being formed in said deck and partially in said circular centering member whereby to strengthen and additionally support said deck and said circular centering member.

3,880,094
DEVICE FOR SUPPORTING PULL OUT PLATES IN A CABINET

Wendelin Kopp, Peterzell, and Karl Kneile, Holzmaden, Teck, both of Germany, assignors to Robert Krause KG, Weilheim, Teck, Germany

Filed Dec. 26, 1973, Ser. No. 428,325
Claims priority, application Germany, Dec. 22, 1972, 2263073
Int. Cl. A47b *1/04*
U.S. Cl. 108—74 **26 Claims**

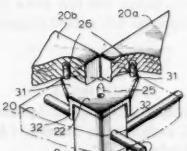


1. In a mechanism for supporting a main plate and an auxiliary plate in a cabinet or the like for parallel substantially linear movement of at least the auxiliary plate form retracted position inside the cabinet to extended position outside the cabinet with the main plate above the auxiliary plate in retracted position of the auxiliary plate and disposed at the cabinet end of the auxiliary plate when the latter is in extended position; said mechanism comprising; telescopic guide means having a first part for connection to the cabinet on the inside thereof and a second part for connection to the underneath side of said auxiliary plate, said guide means guiding said auxiliary plate in linear movement in parallelism with itself between retracted and extended positions, and lifting means operable when the auxiliary plate is moved in retracting direction from extended position for lifting said main plate to permit the auxiliary plate to move into the cabinet beneath the main plate, said lifting means comprising a lift cam stationary in the cabinet and a follower connected to the auxiliary plate and interposed between said lift cam and said main plate.

3,880,095
EXPANDABLE, LARGE CAPACITY, COMPUTER PRINTOUT STORAGE RACK WITH WORK SURFACE

John P. Clark, Elmhurst; Frank J. Malcik, Berwyn, and Jack H. Michaelis, Elmhurst, all of Ill., assignors to Swingline, Inc., Long Island City, N.Y.

Filed Feb. 16, 1973, Ser. No. 333,339
Int. Cl. A47b *3/00*
U.S. Cl. 108—114 **4 Claims**

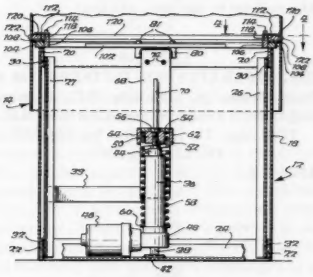


1. A filing rack comprising:
a. an array of hollow uprights;
b. a plurality of cross-pieces extending in a predetermined pattern between the uprights, each end of each of said cross-pieces extending into an upright;
c. first connection means integral with the internally disposed end of a cross-piece, which extends into one of the uprights;
d. second connection means for mating with said first connection means and integral with an element which extends through said hollow upright for mating with and connection to said first connection means, said connection with said first connection means being internal of a common upright;
e. plug means insertable into the upper end of a selected hollow upright;
f. a first hole disposed in said plug;
g. a first pin disposed in said first hole and extending from said plug element;
h. a laterally extending portion extending outward from and integral with said plug element;
i. a second hole disposed in said laterally extending portion;
j. a second pin disposed in said second hole and projecting upward from the laterally extending portion;
k. a leg element integral with said plug extending substantially parallel to the external surface of the common upright and in substantially surface to surface contact with the external surface of the common upright;
l. cantilever means for supporting said extending portion secured to said leg element and said laterally extending portion;
m. top structure; and
n. a plurality of mating holes in said top structure, said mating holes disposed over said first and second pins for mating with said first and second pins.

3,880,096
AUTOPSY TABLE

Robert P. Kaplan, Tonawanda, N.Y., assignor to The Jewett Refrigerator Company, Inc., Buffalo, N.Y.

Filed July 9, 1973, Ser. No. 377,800
Int. Cl. A47b *9/02, 11/00*
U.S. Cl. 108—141 **4 Claims**



1. An autopsy table comprising: an upstanding base; a cylindrical skirt telescopically mounted on said base; a table rigidly secured to the upper end of said skirt for movement therewith; means mounting said skirt for free rotatable movement relative to said base; means releasably locking said skirt in a selective rotatably adjusted position relative to said base; means supporting said skirt for vertical movement relative to said base; means for guiding said skirt during said vertical movement thereof relative to said base; said supporting means including a mechanical drive means having a vertically axially movable actuating rod mounted centrally of said base; means connecting said skirt to said actuating rod, said mounting means including a fixed support ring; a plurality of circumferentially spaced thrust bearings mounted on said support ring; and a rotatable ring connected to said skirt and supported on said thrust bearings for free rotational movement relative thereto, said fixed support ring being provided with a plurality of circumferentially spaced, upstanding lugs secured to the inner peripheral edge thereof; each of said thrust bearings having a recessed portion for receiving one of said lugs; a retainer plate mounted on each of said lugs in spaced relation

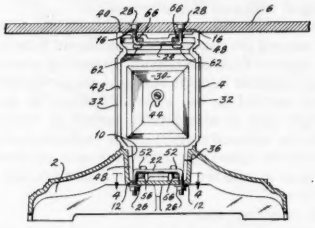
to said thrust bearing for defining a groove receiving a portion of said rotatable ring.

3,880,097

STRUCTURAL MEMBER FOR FURNITURE

Charles F. Camilleri, Affton, Mo., assignor to Gusdorf & Sons, Inc., St. Louis, Mo.

Filed June 1, 1973, Ser. No. 366,992
Int. Cl. A47b *13/02*
U.S. Cl. 108—150 **14 Claims**



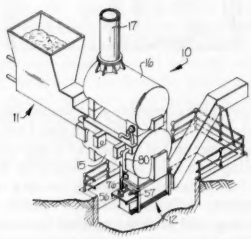
8. In a pedestal table having a base and a top, an improved column extending between the base and the top for supporting the top in an elevated position, said column comprising: first and second column halves fitted back-to-back and abutting each other along abutment surfaces thereon, each column half at its upper and lower ends having a lug and a socket with the lugs of the one column half being fitted into the sockets of the other column half and vice-versa to interlock the column halves against transverse and longitudinal movement relative to each other; and bolts extended behind the lugs and projected from the ends of the column into the base and top for securing the column to the base and top.

3,880,098

METERING APPARATUS FOR INCINERATOR ASH PIT

Robert Elmer McRee, Jr., Charlotte, N.C., assignor to Environmental Control Products, Inc., Charlotte, N.C.

Filed Mar. 25, 1974, Ser. No. 454,368
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 R **14 Claims**



1. In an incinerator including a combustion chamber for burning waste material or fuel, an ash pit extending vertically downwardly from the combustion chamber for the reception and passage therethrough by gravity flow of burnt solid materials which may include irregular-shaped solids, and a conveyor mechanism for communicating generally with the bottom of the ash pit for successively removing the burnt materials from the ash pit; the improvement therewith of means positioned generally medially of the ash pit for receiving the burnt solid materials from the combustion chamber and for successively metering the burnt materials to the conveyor mechanism for successive removal from the ash pit to prevent clogging and jamming of the conveyor mechanism, said means comprising:

a first set of generally horizontally-disposed, sagging, flexible, spaced-apart chains extending across the ash pit and being fixedly secured at the ends thereof to the sides of the ash pit above the conveyor mechanism;

a second set of generally horizontally-disposed, sagging, flexible, spaced-apart chains extending across the ash pit slightly above said first set of chains; and

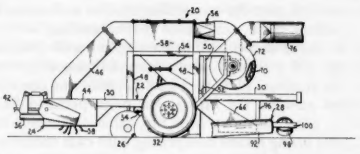
means for carrying and reciprocating said second set of chains with respect to said first set of chains for causing the burnt solid materials which may include irregular-shaped particles to successively work their way through and move between the chains of said first and second sets by moving individual chains away from each other and toward each other through the sagging and flexible construction thereof during the reciprocating action of said second set of chains and thereby successively meter the burnt solid materials to the bottom of the ash pit for reception and successive removal by the conveyor mechanism.

3,880,099

AGRICULTURAL IMPLEMENT

Richard K. Houston, Kansas City, Mo.; Alvin E. Ratzlaff, Orienta, Okla., and Max W. Cruikshank, Cedar Falls, Iowa, assignors to Agrecology, Inc., Kansas City, Mo.

Continuation-in-part of Ser. No. 288,573, Sept. 13, 1972, abandoned. This application Aug. 7, 1973, Ser. No. 386,307
Int. Cl. A01c *5/00*
U.S. Cl. 111—1 **7 Claims**



1. An agricultural implement for use in a field comprising: a carrier adapted for over the field travel; means depending from said carrier for first shearing the soil at spaced apart locations to form the sides of a slot at the carrier is advanced in the field;

means coupled with said carrier for lifting the soil sheared by said shearing means from the area between said spaced apart locations to thereby form said slot;

opposed blade means coupled with said carrier and disposed on either side of said slot in laterally extending intersecting planes for forming opposed watershed areas inclined inwardly toward the slot; and

means carried by the carrier for placing a mulch material in the slot, whereby water will run down said areas into the slot and said material will retard evaporation in the slot.

3,880,100

SEED DRILL

David Gillies, Lyminge, and Robert Anthony Willis, Hythe, both of England, assignors to Stanhay (Ashford) Limited, Ashford, Kent, England

Filed May 18, 1973, Ser. No. 361,415
Claims priority, application United Kingdom, May 22, 1972, 23879/72
Int. Cl. A01c *5/00*
U.S. Cl. 111—77 **3 Claims**

1. A towable seed drilling unit comprising:

a seed hopper;

a seed chamber having walls and a floor formed by a portion of the lower run of an endless belt, said endless belt being regularly perforated by at least one row of holes along its length, each hole being sized to contain a single seed;

means communicating with said seed hopper and said seed chamber for providing gravity feed between said seed hopper and said seed chamber;

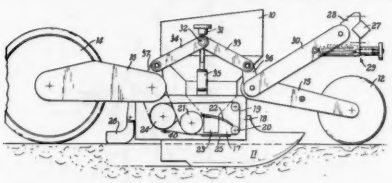
a seed repelling roller in communication with said endless belt for agitating seed in said seed chamber;

a masking plate located below said floor formed by said endless belt, the rear edge of said plate being forwardly spaced from said seed repelling roller and unmasking at least one hole in said endless belt through which a seed may fall;

means including a drive roller for carrying said endless belt;

a coulter located beneath said seed chamber for forming a furrow ahead of said unmasked hole;

a furrow closing member located behind said seed chamber for closing said furrow formed by said coulter;



a first ground contacting wheel located in front of said coulter;

a second ground contacting wheel located in back of said furrow closing member;

drive means operably associated with said second ground contacting wheel and said drive roller for driving said lower run of said endless belt in a direction opposite the direction in which said towable seed drilling unit is towed; and

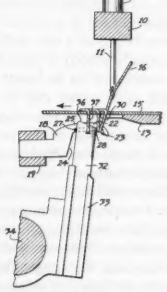
means including at least one pivot arm attached to said first ground contacting wheel, a linkage system coupled to said at least one pivot arm and a manually adjustable screw operatively associated with said linkage system for adjusting the level of said towable seed drilling unit above the ground.

3,880,101

LOOPER APPARATUS FOR TUFTING UNIFORM CUT PILE

William Erby Passons, 2614 Broad St., Chattanooga, Tenn. 37408

Filed Apr. 22, 1974, Ser. No. 462,720
Int. Cl. D05c *15/24*
U.S. Cl. 112—79 R **6 Claims**



1. In a tufting machine having means for stitching a yarn through a base fabric to form loops, a looper mechanism comprising:

a. a looper element for receiving and holding each yarn loop,

b. said looper element having an elongated bill with opposite faces and a lower cutting edge,

c. a knife member having a knife edge having a length less than the length of said cutting edge, and

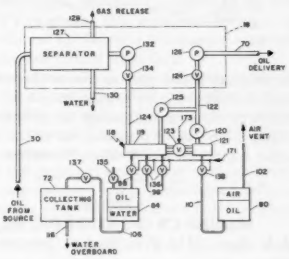
d. means mounting said knife member for reciprocal movement relative to said looper element so that said knife edge continuously, and only, engages one face of said bill, and said knife edge cooperates only with said cutting edge to cut said yarn loop to form cut pile strand of substantially equal length.

3,880,102

METHOD AND APPARATUS FOR OFFSHORE SUBMERSIBLE OIL STORAGE AND DRILLING

Frank N. Biewer, San Diego, Calif., assignor to Offshore Technology Corporation, Escondido, Calif.

Filed Feb. 19, 1974, Ser. No. 443,604
Int. Cl. B63b *35/44*
U.S. Cl. 114—.5 T **29 Claims**



7. The method of maintaining a given submerged draft of a semi-submersible offshore drilling and oil storage and production unit comprising,

submerging a hull having a plurality of individual fluid-tight tanks secured together in side-by-side relationship and a central column fixed at the center of said hull,

admitting air at substantially atmospheric pressure into a first group of said tanks and admitting seawater ballast into a second group of said tanks until said unit has neutral buoyancy with said tanks submerged to a given submerged draft,

and inserting oil simultaneously into said first and second group of tanks in proportions to maintain said given submerged draft of said tanks.

3,880,103

TETHERED MINE HUNTING SYSTEM

Howard R. Talkington, La Jolla, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 21, 1972, Ser. No. 283,127
Int. Cl. B63g *8/00*
U.S. Cl. 114—16 R **10 Claims**

1. An undersea tethered vehicle system comprising:

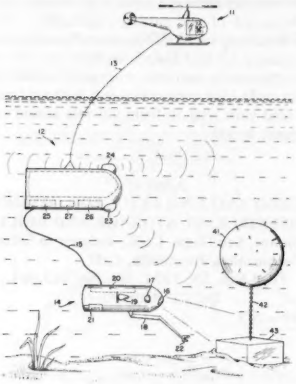
a support vehicle;

a primary tether connected to said support vehicle and extending downwardly therefrom for conducting electrical currents and supporting tensional forces therealong;

a lift module attached to the primary tether for support thereby;

a submarine vehicle configured for retention within the lift module;

a source of motive power housed within the lift module; and a secondary tether connected between the submarine vehicle and the lift module and effectively connected to said source of motive power within the lift module for



transmission of the motive power therealong and effectively connected to the primary tether for transmission of electrical currents therealong to permit the submarine vehicle's movement into and out of the lift module and within a predetermined range thereabout.

3,880,104

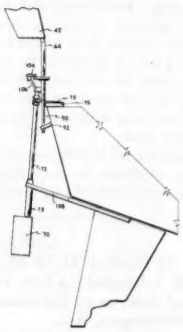
MARINE CRAFT STEERING MEANS

Roland S. Saye, 1512 Priscilla Ln., Newport Beach, Calif. 92660

Continuation of Ser. No. 92,597, Nov. 25, 1970, Pat. No. 3,765,361. This application June 7, 1972, Ser. No. 260,466

Int. Cl. B63h *26/10*

U.S. Cl. 114—144 C **10 Claims**



1. In a self steering means having mechanical feedback for a marine craft having a main rudder which comprises course setting means supported on said craft, servo rudder means comprising a servo rudder support shaft, a servo blade mounted thereon, pivot means carried by said craft to suspend, vertically, said servo rudder means and permit its rotation about the axis of said support shaft and about an axis generally parallel to the longitudinal axis of said craft, tiller means mounted on said support shaft above said pivot means, tiller connecting means connecting said tiller means to said course setting means, and a stirrup shaped bracket fixed to said craft's main rudder and extending about and in sliding and rotating engagement with said servo rudder support shaft and being of sufficient width to permit passage of said servo blade therethrough whereby said servo rudder can be temporarily removed from the craft.

3,880,105

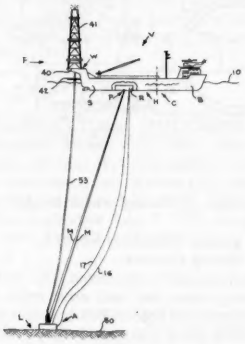
DRILLING VESSEL AND DRILLING VESSEL MOORING SYSTEM AND METHOD

Frank Allan Bryant, Houston, Tex., assignor to The Offshore Company, Houston, Tex.

Filed Oct. 1, 1973, Ser. No. 402,255

Int. Cl. B63b *21/50*

U.S. Cl. 114—206 R **2 Claims**



2. A system for mooring a floating drilling vessel to a seabed over a selected subsurface location, the vessel having a hull, a longitudinal axis, a wind and water pressure center line and a work area on the vessel from which subsurface drilling and other well operations may be conducted, the work area being longitudinally spaced from the pressure center line, the system comprising:

an anchor lowerable from the vessel to the seabed at the selected location;

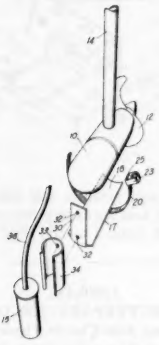
a riser pipe extending downwardly from the work area to the anchor;

the anchor having a central bore through which well bore equipment connected to the riser pipe may extend, having a ballast chamber for receiving fluid to vary the buoyancy of the anchor, and having a swivel device rotatable around the central bore, the swivel device having connecting means for attachment to mooring lines;

the hull of the vessel having a recess for receiving the anchor, the recess being of a size sufficient to contain said anchor substantially wholly within it; and

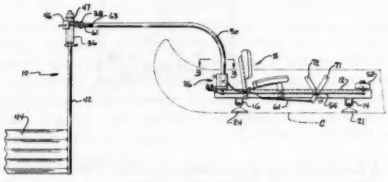
a mooring line connected at its lower end to the swivel on the anchor and at its upper end to the vessel at a point between the work area of the vessel and the wind and water pressure center line of the vessel so that when the mooring line is taut, the work area is in substantially vertical alignment with said selected subsurface location, whereby, as the vessel drifts in response to the net force of the wind and water, the vessel swings about a point on the sea subsurface location to keep the work area in substantially vertical alignment with the subsurface location and to maintain the longitudinal axis substantially aligned with the net force of wind and water so that the riser pipe is not subjected to excessive bending stresses and remains substantially vertical and drilling and other well operations may be conducted from the vessel on the work area.

3,880,106
TRANSDUCER BRACKET
Bobby E. Farmer, 221 Buena Vista Dr., West Point, Ga. 39180
Filed Dec. 28, 1973, Ser. No. 429,065
Int. Cl. B63h 21/26
U.S. Cl. 115—18 E 1 Claim



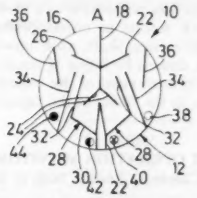
1. A bracket assembly for mounting a transducer to a boat comprising an adjustable band adapted to be secured about a motor casing, a support member secured to said band, and transducer gripping means mounted to said support member, wherein said support member includes a concave surface detailed to be held in snug abutment about a convex surface of a motor casing and wherein said support member comprises two legs joined together in L-shaped configuration whereby one of said legs may be secured in abutment with a bottom surface of a motor casing and the other of said legs may be secured in abutment with a front portion of the motor casing.

3,880,107
PROPULSION DEVICE FOR WATER CRAFT
John C. Miles, 1401 N. Coler St., Urbana, Ill. 61801
Filed Jan. 18, 1974, Ser. No. 434,664
Int. Cl. B63h 16/12
U.S. Cl. 115—21 11 Claims



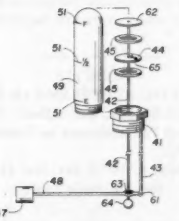
11. A manually-operated propulsion device for use on a water craft and including: a boom adapted to be mounted on the craft with an outboard end disposed rearwardly of the craft; means for reciprocating the boom in a sculling action; a pivot shaft mounted adjacent the outboard end of the boom; a blade secured to the pivot shaft and operable to propel the craft as the boom is reciprocated; means for operating the blade in one of two modes, the first mode in which the blade is free to swing to opposite sides of the boom during the sculling action, and the second in which the blade is held in a preselected position on either side of the boom to effect steering of the craft while the boom is reciprocated.

3,880,108
TUMBLE DETECTOR
Miguel Molina Anton, Madrid, Spain, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Oct. 4, 1973, Ser. No. 403,498
Claims priority, application Spain, Oct. 31, 1972, 185177, 185178
Int. Cl. G01d 21/00; B65d 79/2
U.S. Cl. 116—114 AH 11 Claims



1. A tumble detector for accompanying goods to be transported to determine whether said goods have been transported in a recommended position, comprising:
- a generally flat closed container adapted to be vertically disposed in said goods, said container having a vertical front face thereof formed of a transparent material and a rear face parallel to said front face;
- partition means in said container comprisng walls disposed perpendicular to said faces defining a labyrinth;
- said labyrinth defining a plurality of pockets within said container, each pocket being interconnected directly or indirectly to each other pocket;
- a plurality of different colored balls in said labyrinth, each said ball being disposed in a predetermined different one of said pockets when said container is initially mounted in said goods; and
- said labyrinth being shaped so that said balls assume a predetermined different position in said container to indicate the amount and direction of turning of said container in at least 90° turning increments resulting from the handling undergone by said goods during transport.

3,880,109
FUEL DELIVERY DETECTOR
Albert P. Festa, Brooklyn, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Feb. 28, 1974, Ser. No. 446,686
Int. Cl. G01f 23/08
U.S. Cl. 116—114 R 2 Claims



1. An indicating mechanism for marking the fluid level of the fluid in a tank so as to indicate the minimum fluid level in the tank existing prior to subsequent fill of the tank and that may be set to indicate the actual level of the fluid in the tank after the tank has been filled, comprising
- a float attached to a float arm which is pivotably mounted on a fixed member located inside a tank for holding fluids,
- an indicator unit mounted on the exterior of the top of the tank, said indicator unit incorporating a vertical indicator

shaft which extends from beyond the upper exterior of the tank into the interior of the tank, with the lower end of said shaft extending below the float arm, and with the lower interior end of the shaft fitted with means to loosely bear against the underside of the float arm when the float arm rests on said means,

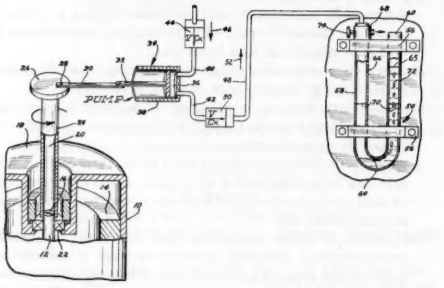
said vertical shaft mounted in a fitting fastened to the top of the tank, in slideable frictional engagement with said fitting, such that once the vertical shaft has been manually set to bear against the float arm, downward movement of the float arm responsive to a lowering of liquid level in the tank results in corresponding downward movement of the vertical shaft, while upward movement of the float arm, caused by filling of liquid into the tank, does not result in movement of the indicator shaft from its position prior to the filling of the liquid into the tank.

3,880,110

SHAFT OPERATION MONITOR

Leo J. Loesch, and Claude E. Loesch, both of Kimball, Minn. 55353

Filed July 30, 1973, Ser. No. 384,030
Int. Cl. G01p *3/28*
U.S. Cl. 116—115 **9 Claims**



1. Self-monitoring apparatus for continuously monitoring the rotation of a shaft, comprising an air pump, energy transmitting means transmitting energy of a rotating shaft to the air pump to cause the latter to emit air under pressure, a substantially instantaneously responsive air-flow indicator and an air line connecting the pump and indicator and carrying said air under pressure from the pump to the indicator, the indicator providing continuous visual indication of the continuous flow of air thereto and having an adjustable bleeder valve at its inlet for bleeding to the atmosphere before said indicator a regulated portion of air under pressure received through the air line.

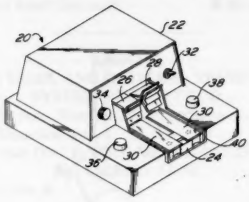
3,880,111

AUTOMATIC BLOOD SMEAR DEVICE

Marshall S. Levine, Wayne, and Albert A. Faulkner, Conshohocken, both of Pa., assignors to Geometric Data Corporation, Wayne, Pa.

Filed Nov. 5, 1973, Ser. No. 413,004
Int. Cl. B05c *11/02*
U.S. Cl. 118—4 **40 Claims**

1. A smearing device for slides, said device enabling a drop of fluid to be placed on the top surface of said slide and located towards one end thereof, said device including holding means for supporting a slide, spreading means provided in contact with said slide, translation means for causing relative movement between said slide and said spreading means, said spreading means being located adjacent the other end of said slide prior to smearing said slide, control means for causing said translation means to cause relative movement of said spreading means towards said one end until said spreading means reaches the position for said fluid, said control means including delay means for maintaining said spreading means for a predetermined period of time at said position for said fluid, said control means initiating said translation means after said period of time to cause said spreading means to be moved



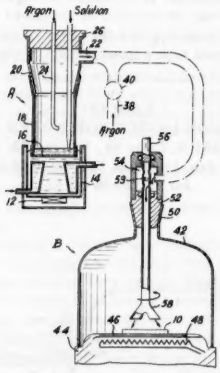
relatively away from said position, said control means causing said movement until said spreading means is disposed in its original position with respect to said slide.

3,880,112

DEVICE FOR THE PREPARATION OF THIN FILMS

Jean Spitz, Gieres, and Jean-Claude Viguie, Grenoble, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Division of Ser. No. 190,706, Oct. 20, 1971, Pat. No. 3,840,391. This application Apr. 17, 1973, Ser. No. 352,086
Int. Cl. C23c *13/12*
U.S. Cl. 118—8 **3 Claims**

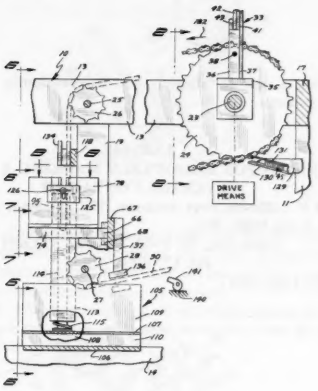


1. A device for the preparation of a thin film of metal or of a metallic compound comprising an aerosol generator, a deposition chamber, means in said chamber for heating a substrate and means for circulating a carrier gas from said generator to said chamber, means for controlling the flow rate of said carrier gas, wherein said generator comprises an ultrasonic wave emitter acting on a solution forming droplets of the material to be deposited on the substrate in said chamber to atomize said solution means for controlling the power of the ultrasonic wave and means for controlling the frequency of the ultrasonic wave, the quantity of the aerosol being regulated by the power of the ultrasonic wave, the size of the droplets being regulated by the ultrasonic frequency and the quantity of aerosol being regulated by the flow rate of carrier gas.

3,880,113
ROD END COATING APPARATUS

Robert J. Mueller, Inver Grove Heights, Minn.; Philip O. Jesme, Jr., Prescott, Wis., and John A. Calkins, Hastings, Minn., assignors to Smead Manufacturing Company, Hastings, Minn.

Filed July 5, 1973, Ser. No. 376,701
Int. Cl. B44d *1/94*; **B23c** *11/00*
U.S. Cl. 118—48 **19 Claims**



1. Apparatus for coating an end portion of a rod, comprising a frame, a rod hopper assembly mounted on the frame for holding a supply of rods in a condition to have one rod at a time removed therefrom, means for fluidizing rod end coating powder and discharging the powder to fall under gravity flow in a predetermined powder flow path, said fluidizing means being mounted on the frame, a rod carrier assembly for removing a rod from the hopper assembly and supportingly retain the removed rod thereon as the rod end portion is being coated, and endless conveyor means mounted on the frame and mountingly moving the rod carrier assembly adjacent the hopper assembly to remove a rod from the hopper assembly and thence moving the rod carrier assembly to move the rod end portion in said powder flow path to have powder impinge thereon, said fluidizing means including a rod coating fluidized bed assembly mounted on the frame that has a powder discharged portion for discharging powder to fall through said powder flow path, said fluidized bed assembly having a fluidized powder chamber, and means for containing a supply of powder mounted on the frame beneath said fluidized bed assembly for catching powder discharged therefrom and containing a supply of powder, said powder supply means including a fluidized bed member having a chamber for containing powder in a fluidized condition and means for elevating powder from the powder supply means chamber to the bed assembly powder chamber.

3,880,114
CHAMFERING APPARATUS WITH COATING DEVICE

Daniel J. Dowd, Williamsport, Pa., assignor to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 375,655, July 2, 1973, Pat. No. 3,834,274.
This application June 12, 1974, Ser. No. 478,565
Int. Cl. B05b *11/00*
U.S. Cl. 118—75 **7 Claims**

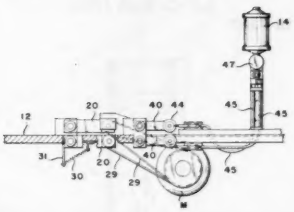
1. Chamfering apparatus comprising, in combination:

A. Table structure having a planar top surface for supporting workpieces having top and bottom planar faces;

B. A workpiece guide rail dividing said top surface into an instrument section and a workpiece support section;

C. First and second arms pivotally connected at one end thereof to said table structure on the instrument section side of said guide rail about horizontal pivot axes, said first and second arm pivotal connections spaced along said guide rail with axes thereof disposed substantially perpendicular to said guide rail;

D. A shaft rotatably journaled in the other end of said arms to axially extend across said guide rail substantially parallel to said pivot axes, said shaft having a tool end over said workpiece section, the shaft of said first arm disposed along said guide rail between said first and second arm pivotal connections;



E. Said first arm shaft also having a sheave end disposed over said instrument section and workpiece engaging means secured to the tool end thereof to limit the distance at which said shaft may approach a workpiece face;

F. A rotary chamfering tool also secured to the tool end of said first arm shaft;

G. A rotary stain application tool secured to the tool end of said second arm shaft;

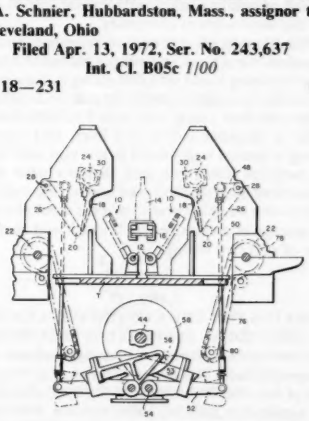
H. A rotational power source secured to said table structure below said top surface; and

I. A resiliently extensible driving connection between said power source and the sheave end of said first arm shaft.

3,880,115
DRIVEN TRANSFER ROLL FOR LABELING MACHINE

Edward A. Schnier, Hubbardston, Mass., assignor to A-T-O Inc., Cleveland, Ohio

Filed Apr. 13, 1972, Ser. No. 243,637
Int. Cl. B05c *1/00*
U.S. Cl. 118—231 **6 Claims**



1. Apparatus for applying a uniformly thick coating of adhesive to a surface of predetermined length, with a transfer roll of limited diameter having a circumferential surface of predetermined length which is less than said surface of predetermined length, supporting the transfer roll for translational movement about a predetermined axis relative to said surface of predetermined length and parallel threto from one end to the other end for rotation relative to said surface about an axis

parallel to said predetermined axis, means for simultaneously effecting translation and rotation of the roll and means for controlling the rate of rotation of the roll relative to the surface while traveling in translation to cause it to make only one complete turn.

3,880,116

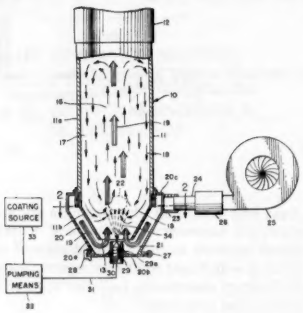
PARTICLE COATING APPARATUS

Elliott B. Prillig, Schaumburg; Libero A. Gardella, Wildwood, and Albert R. Knuth, Mt. Prospect, all of Ill., assignors to Arnar-Stone Laboratories, Inc., Mt. Prospect, Ill.

Filed Feb. 14, 1974, Ser. No. 442,669

Int. Cl. B05b *17/00*

U.S. Cl. 118—303 **22 Claims**



1. A particle coating apparatus having an upstanding first casing having a generally cylindrical upper section and a downwardly tapered frusto-conical lower section terminating in an air inlet, a nozzle for spraying a coating liquid upwardly into the lower section of said casing, means for supplying coating liquid under pressure to said nozzle, and means for directing air under pressure upwardly through said inlet about said nozzle to suspend and circulate particles in said casing for the coating of said particles as the same are so circulated, wherein the improvement comprises

said inlet being open and unobstructed for the free downward flow of particles therethrough when the discharge of air and coating liquid into said casing is discontinued, said means for directing air including a second casing disposed below said first casing and joined to said first casing to define a chamber below said inlet, said second casing having a bottom wall spaced below said inlet for supporting particles falling into said chamber when the flow of pressurized air is discontinued and having a side wall with at least one air entry port above the level of said inlet for the passage of pressurized air through said chamber to the inlet of said first casing.

3,880,117

APPARATUS FOR THE CONTINUOUS COATING OF INDIVIDUAL SUPPORTING ELEMENTS

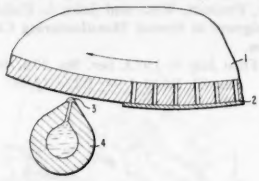
Joachim Stroszynski, Naurod, Germany, assignor to Hoechst Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Division of Ser. No. 743,459, July 9, 1968, abandoned. This application Jan. 28, 1971, Ser. No. 110,720

Int. Cl. B44d *1/08;* **B05c** *11/12;* **B65h** *3/10*

U.S. Cl. 118—410 **3 Claims**

1. An apparatus for the continuous coating with a liquid material of a plurality of individual supports which comprises means for passing the supports past a coating die, means for forming a small accumulation of liquid material on the die orifice prior to the arrival at the orifice of a support to be coated, and means for feeding a constant quantity of the liquid material through the orifice onto the support as the latter passes the orifice, said means for forming the small accumulation of liquid in the die orifice and said means for feeding a constant quantity of the liquid material through the orifice



including a pair of infinitely and independently regulatable pump means.

3,880,118

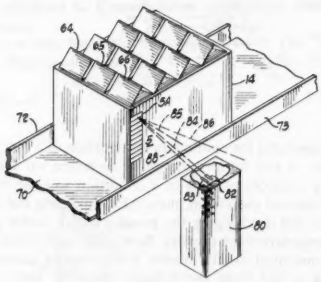
APPARATUS FOR REMOVABLY MARKING A FOOD OR BEVERAGE CONTAINER

Joseph P. Milleson, Fort Atkinson, Wis., assignor to Crepaco, Inc., Lake Mills, Wis.

Filed Feb. 20, 1973, Ser. No. 333,621

Int. Cl. B05c *12/00*

U.S. Cl. 118—621 **8 Claims**



1. An apparatus for applying a readily removable marking to a food or beverage container surface with a plurality of dielectric reflecting particles and using a volatile liquid to prepare the surface, comprising in combination:

means for directing the volatile liquid to the surface to prepare the surface for attraction with the reflecting particles;

means for establishing an attractive force between the reflecting particles and the prepared surface;

means for directing the reflecting particles to the prepared surface to be held thereat by the attractive force,

said means for directing the liquid to the surface forming a liquid layer on the surface to decelerate the impact of the dielectric reflecting particles on the surface to prevent the dielectric reflecting particles from bouncing off the surface,

and said means for establishing an attractive force between the reflecting particles and the prepared surface establishing the attractive force prior to contact between the reflecting particles and the prepared surface.

3,880,119

DEVELOPMENT APPARATUS

Lawrence J. Fraser, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 20, 1973, Ser. No. 426,997

Int. Cl. G03g *13/00*

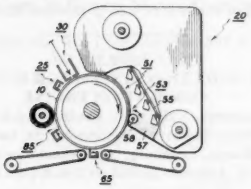
U.S. Cl. 118—636 **4 Claims**

1. In a xerographic copier system in which a xerographic member bearing latent electrostatic images is advanced through processing station for producing high quality copies,

improved development apparatus for developing line or solid area copies comprising

first development means for cascading a two-component magnetic developer material across a moving xerographic member bearing latent electrostatic images to be developed,

second development means including magnetic development means positioned in the path of said latent electrostatic image subsequent to the first development means,



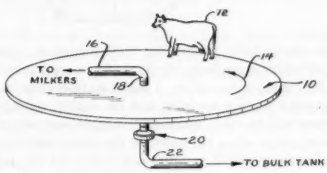
said magnetic development means having an operative condition for development of solid area portions of the latent electrostatic images and an inoperative condition when no development occurs thereof,

means for actuating magnetic development means to cause development of the solid area portions of the images at the option of the operator.

3,880,120
ROTARY COUPLING

Robert J. Shulick, St. Charles, Ill., assignor to Babson Bros. Co., Oak Brook, Ill.

Filed Oct. 19, 1973, Ser. No. 407,979
Int. Cl. A01j *7/00*
U.S. Cl. 119—14.04 **6 Claims**

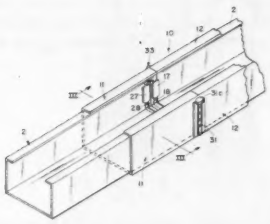


1. In a milking parlor including a rotary table for receiving and supporting cows during the milking thereof, a conduit rotatable with said table for receiving milk from the cow being milked thereon, a fixed conduit for receiving milk and directing the same to a point for further processing, and a rotary joint interconnecting said conduits whereby the first may rotate relative to the second and with the table, the improvement wherein said rotary joint comprises: a male coupling member in fluid communication with one of said conduits; a female coupling member in fluid communication with the other conduits and coaxially receiving said male member; an annular seal embracing the end of said male member remote from the conduit with which it is in fluid communication and the interior of said female coupling member; means interconnecting said male and female coupling members for relative rotary movement; and a further annular seal interposed between an exterior surface of said male coupling member and said interconnecting means; said female coupling member, male coupling member and said first mentioned annular seal having coaxial fluid passages of substantially identical diameter.

3,880,121
ANIMAL FEEDING TROUGH APPARATUS WITH HINGED TROUGH

Robert L. Van Huis, Zeeland, Mich., assignor to U.S. Industries, Inc., New York, N.Y.

Filed Oct. 10, 1973, Ser. No. 404,981
Int. Cl. A01k *5/02*
U.S. Cl. 119—52 AF **8 Claims**

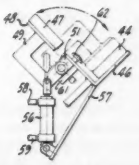


6. A coupler for connecting two sections of a trough together, comprising two parts, a first part telescopically connected to said one trough section and a second part telescopically connected to the other of said trough sections, said parts each having at one end thereof a cross section corresponding to the cross section of the said section of said trough to which it is to be connected and at the other end having a cross section corresponding to the cross section of the other end of the other part; said parts each having an opening at the tops thereof; means for pivotally connecting said parts together for pivotal movement downwardly away from openings; and means for releasably locking such parts together when in aligned, mated position.

3,880,122
POULTRY INSEMINATOR

Arthur J. Randolph, 4711 Sonoma Hwy., and Albertus G. Horsting, 6685 Sonoma Hwy., both of Santa Rosa, Calif. 95405

Continuation-in-part of Ser. No. 315,421, Dec. 15, 1972, Pat. No. 3,774,578. This application Aug. 2, 1973, Ser. No. 385,176
Int. Cl. A01k *37/00*
U.S. Cl. 119—97 R **6 Claims**



5. Poultry insemination apparatus comprising

means defining a seat for an operator,

adjustable support means mounted on said seat defining means and extending over one side of said seat,

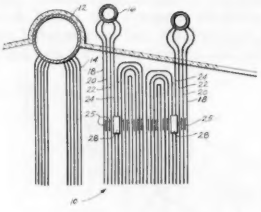
clamping means including a support plate secured to said support means over said seat and carrying a stationary lower pad and a movable upper pad, with a fluid cylinder engaging the upper pad for movement thereof, and

control means mounted on said support plate in position for ready engagement by an operator and connected to said cylinder for controlling operation thereof to move said pads into and out of engagement.

3,880,123
SEMI-RIGID TUBE SUPPORTING TIE

Jay Horl Freiday, Hartford, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed July 22, 1974, Ser. No. 490,811
Int. Cl. F22b *37/24*
U.S. Cl. 122—510 4 Claims

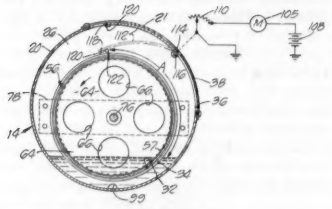


1. In combination a tube supporting tie for tying two closely spaced parallel tubes together, said tubes having a near side and a far side, the tube supporting tie including a right-hand S-shaped strap passing between the tubes and shaped to conform to the contour of the tubes, and structurally connecting the near side of one tube with the far side of the other tube, and a left-hand S-shaped strap passing between the tubes and shaped to conform to the contour of the tubes and structurally connecting the far side of said one tube with the near side of the other tube, the ends of both straps being wider than the middle portions of the straps, with the widened ends welded to the tubes.

3,880,124
AIR FILTER AND HUMIDIFIER

Cleo C. Stratton, 2123 Kern St., San Bernardino, Calif. 92405

Filed June 21, 1973, Ser. No. 372,289
Int. Cl. F02m *25/02*
U.S. Cl. 123—25 A 13 Claims

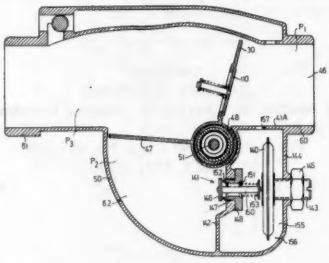


1. An air filtering and humidifying apparatus in combination with an internal combustion engine, and said air filtering and humidifying apparatus including an adaptor means for operatively coupling the apparatus to the air intake of the carburetor of the internal combustion engine and further comprising:
a. a receptacle for containing water, said receptacle comprising first and second communicating chambers, said first chamber being provided with an air intake opening;
b. an air passageway interconnecting said second chamber of said receptacle and the air intake of the carburetor; and
c. an air filtering and humidifying means for filtering and humidifying the stream of air flowing through the apparatus, said means comprising:
1 a perforated drum rotatably mounted within said first chamber and interposed between said second chamber and the air intake of said first chamber, said drum being constructed and arranged so that as the drum rotates at least the periphery thereof is immersed in the water in said receptacle;
2. sensor means for sensing the demand for humidified air at the intake of the carburetor, said sensor means comprising a sensor element disposed in the path of air flowing to the carburetor, said sensor element being adapted to sense the water content of the air flowing to the carburetor; and
3. control means operatively interconnected with said sensor means and responsive thereto for controlling the speed of rotation of said perforated drum.

3,880,125
FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Werner Kammerer, Vaihingen; Erwin Naegele, Hessingheim; Peter Romann; Norbert Rittmannsberger, both of Stuttgart; Heinrich Knapp, Leonberg, and Gernot Merz, Burgberg, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Mar. 12, 1973, Ser. No. 326,660
Claims priority, application Germany, Sept. 21, 1972, 2246373
Int. Cl. F02b *3/00*
U.S. Cl. 123—32 EA 25 Claims



1. In an electrically controlled fuel injection system for internal combustion engines, particularly in an intermittently operated fuel injection system, a combination comprising an intake manifold having an inlet and an outlet; an adjustable throttle mounted in said manifold; at least one electromagnetic fuel injection valve provided in the region of said outlet; a control circuit operable to open said valve for varying intervals of time which determine the amounts of injected fuel, said circuit including an energy storing device which undergoes a first change of stored energy between successive openings of said valve and undergoes an opposite second change of stored energy during successive openings of said valve whereby the duration of the second change of stored energy determines the length of said intervals; transducer means for changing the duration of the second change of stored energy of said device as a function of changes in the quantity of air flowing in said manifold, comprising a regulating member including an output connected with said circuit and having a plurality of conditions each corresponding to a different length of said intervals, and an air quantity meter operative to change the condition of said regulating member as a function of changes in the rate of air flow in said manifold, said meter comprising a flap pivotably mounted in said manifold between said throttle and said inlet to assume a plurality of positions each corresponding to a different rate of air flow in said manifold, said flap being operatively connected with said regulating member, and pneumatic damping means rigid with said flap and operative to oppose fluctuations in the position of said flap, wherein said flow meter further comprises resilient means for opposing the pivotal movement of said flap in response to increasing rate of air flow in said manifold, said flap being pivotable about an axis which is adjacent to the path of air flow in said manifold,

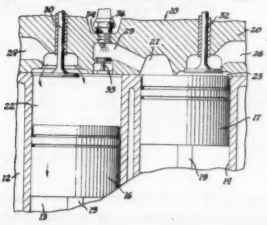
wherein said meter further includes a housing forming part of said manifold, said flap being mounted in said housing and said damping means comprising a blade inclined with respect to said flap, said flap having a hub which surrounds said axis.

3,880,126

SPLIT CYLINDER ENGINE AND METHOD OF OPERATION

Kelly W. Thurston, and John H. Lundy, both of Okemos, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 10, 1973, Ser. No. 358,836
Int. Cl. F02b *33/22*
U.S. Cl. 123—70 R **10 Claims**



1. A two-stroke cycle split cylinder internal combustion engine comprising

a cylinder block having a pair of adjacent cylinders consisting of an induction cylinder and a power cylinder,

a cylinder head closing adjacent ends of said cylinders and having an inlet port to said induction cylinder, an exhaust port from said power cylinder and a transfer passage between said cylinders,

pistons in said cylinders and arranged for reciprocation in predetermined timed relation, with the piston of said induction cylinder leading the piston of said power cylinder by less than one stroke,

said cylinder head mounting an inlet valve closing said inlet port and operable to admit an inlet charge to said induction cylinder, an exhaust valve closing said exhaust port and openable to allow escape of gases from said power cylinder and a transfer valve closing said transfer passage intermediate said induction and power cylinders and openable to permit the flow of gases from said induction cylinder to said power cylinder, and

spark ignition means in a portion of said transfer passage between said transfer valve and said power cylinder and closely adjacent said transfer valve, such portion of said transfer passage forming a recessed initial combustion chamber open to said power cylinder,

said exhaust valve being actuated in timed relation to said engine pistons and being arranged to close sufficiently early in the compression stroke of the power piston to trap a relatively large volume of burned gases in said power cylinder for mixture with and dilution of part of the fresh gases transferred from said induction cylinder for combustion in said transfer passage and said power cylinder.

3,880,127

HYDRAULIC VALVE GEAR

Roy F. Abell, Jr., Saginaw, Mich., assignor to Eaton Corporation, Cleveland, Ohio

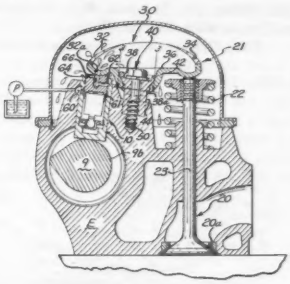
Filed Dec. 7, 1972, Ser. No. 313,008
Int. Cl. F01m *1/06*
U.S. Cl. 123—90.35 **5 Claims**

1. Valve gear means for use in an internal combustion engine having a driven cam and a source of pressurized liquid lubricant, said valve gear comprising:

a. a valve lifter contacting and following said cam and in fluid communication with said source of pressurized liquid lubricant, said valve lifter providing a metered portion of said lubricant to an aperture in the end thereof remote from said cam, said remote end having a substantially flat surface disposed transversely of the direction of motion of said lifter;

b. a poppet valve for controlling the gas flow to and from the engine combustion chamber, and

c. a rocker arm pivotally interposed between said valve lifter and said poppet valve, said rocker arm having an upwardly opening lubricant-receiving cavity and having a first end portion operatively contacting said remote end



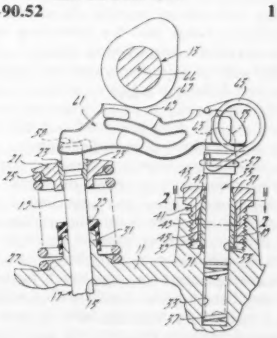
of said valve lifter and a second end portion operatively contacting the stem of said poppet valve, such that upon rotation of said cam, axial movements of said lifter result in opposite axial movements of said poppet valve, said first end portion having a convex surface with a lubricant-receiving aperture therethrough, said rocker arm being mounted to said engine for oscillation in the plane defined by the hydraulic valve lifter and poppet valve axes only, said rocker arm convex surface and said substantially flat transverse surface of said hydraulic valve lifter remote end being in sliding communication, with said apertures being in sliding registration for providing a supply of valve gear lubricant to said cavity.

3,880,128

VALVE ACTUATION MECHANISM INCLUDING VALVE LASH ADJUSTMENT MEANS

George F. Stirrat, Bloomfield Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 2, 1973, Ser. No. 356,524
Int. Cl. F01l *1/14*
U.S. Cl. 123—90.52 **11 Claims**



1. In an internal combustion engine having a cylinder head, a bore formed in the cylinder head,

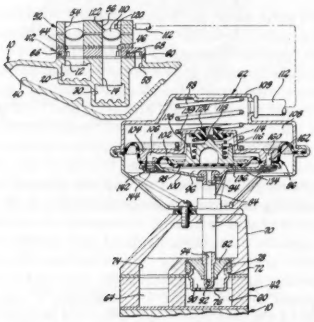
a rocker arm fulcrum stud slidingly received within said bore and having one end protruding therefrom,
spring means engagable with said stud urging the protrusion of said stud from said bore,
clamp means threadedly engagable with said cylinder head and frictionally engagable with said stud,
said clamp means being movable to release and to secure said stud relative to said cylinder head.

3,880,129

PRESSURE TRANSDUCER AND EXHAUST GAS RECIRCULATION CONTROL VALVE USING SAME

Thomas J. Hollis, Jr., Fairport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 31, 1973, Ser. No. 411,397
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **5 Claims**



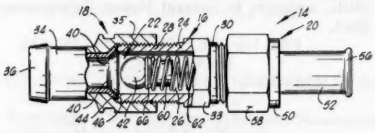
1. For use on an internal combustion engine having an induction passage for air flow to the engine, a throttle in said induction passage for controlling air flow therethrough, and an exhaust passage for exhaust gas flow from the engine, a pressure transducer for converting the variable pressure in said exhaust passage to a variable vacuum signal comprising a reciprocable pressure responsive diaphragm, a first housing member secured on one side of said diaphragm to form an exhaust pressure chamber therebetween, a second housing member secured on the other side of said diaphragm to form an atmospheric pressure chamber therebetween, openings for subjecting said exhaust pressure chamber to the pressure in said exhaust passage and for subjecting said atmospheric pressure chamber to atmospheric pressure, a cover enclosing said other side of said diaphragm and said second housing member and defining a region outside said atmospheric pressure chamber adapted to be subjected to the vacuum in said induction passage downstream of said throttle, said second housing member having an orifice opening from said atmospheric pressure chamber to said region, said diaphragm having a valve member reciprocable therewith, said valve member having a base portion and a tip portion and being associated with said orifice for controlling air flow from said atmospheric pressure chamber into said region to thereby vary the pressure in said region in accordance with variations in the exhaust passage pressure, and which further comprises an orifice member surrounding said orifice, said orifice member having a resilient lip receiving said tip portion of said valve member and a seating rim receiving said base portion of said valve member after said tip portion has engaged said resilient lip whereby said valve member may seal against said orifice member to prevent air flow into said region without causing said tip portion to stick in said orifice.

3,880,130

CONTROL VALVE

Victor Hecht, Haysville, Kans., assignor to C. Wayne Stearns, Haysville, Kans.

Filed Apr. 23, 1973, Ser. No. 353,902
Int. Cl. F02f *9/02*
U.S. Cl. 123—119 B **1 Claim**

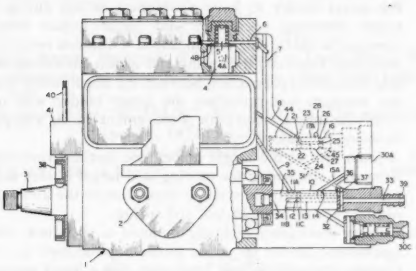


1. An improved internal combustion engine having a crank case, or the like, a carburetor, or the like, and an intake manifold mounting the latter, wherein the improvement comprises: a flexible conduit connecting between said crankcase and said intake manifold to place same in fluid communication with each other, a valve body mounted in said conduit and having an inlet and an outlet and a cavity communicably connected between said inlet and said outlet, said valve body including a main valve body, an inlet end member, an outlet end member, and an outlet collar member, said inlet end member threadably engages said main valve body member, said collar member mounting on said outlet end member and threadably engages said main valve body member to interconnect said outlet end member and said main valve body, said inlet end member said main body member and said outlet end member being generally aligned with a common axis, a valve seat in said valve body inlet end member, a valve seat closure member in said cavity in a normally engaged position with said valve seat, means in said cavity in contact with said outlet end member to resiliently urge said valve seat closure member into said normally engaged position, said valve seat closure member being a ball member, said valve seat has a generally annular surface to engage said ball member, said means to resiliently urge said ball member to a closed position includes a hollow ball follower member in contact with said ball and a helical spring in contact with said ball follower member, said spring being in compression, said inlet member has said valve seat on the inner end portion thereof, said inlet member and said outlet member each has elongated outer end portions constructed and adapted to be mounted with said flexible conduit, said spring has a spring retaining member on the end thereof opposite said ball contact member, said spring retaining member being in contact with an inner end portion of said outlet end member, said valve body is operable at a pressure differential in the range of 3 to 5 inches of mercury between said outlet and said inlet, and a crankcase vapors trap communicably connected in said conduit before said inlet of said valve, said crankcase vapors trap including an openable container with an inlet and an outlet with means to circulate vapors therein and a reservoir therein, said crankcase vapors trap is constructed and adapted to in use receive crankcase vapors, remove liquid portions therein and pass the resulting vapors to said valve body to prevent fluids from entering said valve, said control valve body being constructed, adapted and connected in said conduit to in use be open when said engine has normal operating pressure in said intake manifold to permit passage of fluid from said crankcase to said intake manifold, and to close when the engine operating pressure in said intake manifold increases to a pressure above normal.

3,880,131
FUEL INJECTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Russell William Twaddell, and Edwin Ben Watson, both of Sidney, N.Y., assignors to The Bendix Corporation, Sidney, N.Y.

Filed June 28, 1973, Ser. No. 374,732
Int. Cl. F02m *39/00*
U.S. Cl. 123—139 E **6 Claims**

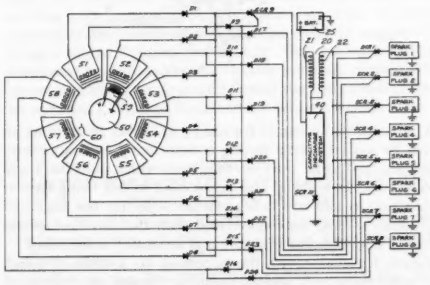


1. A fuel injection system for an internal combustion engine having a pumping unit for pressurizing fuel;
   a distributor connected to the pumping unit and receiving fuel under pressure from the pumping unit for delivery in timed sequence to the engine; and
   a pair of electro-magnetic valves receiving fuel under pressure from the pumping unit and connected to a spill path, and means for providing electrical signals in timed relation to the engine to operate one valve to close the spill path to begin a fuel injection period to the engine and to operate the other valve to open the spill path to end the fuel injection period.

3,880,132
SOLID STATE IGNITION SYSTEM

Norman Whatley, Jr., San Francisco, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed July 26, 1973, Ser. No. 383,130
Int. Cl. F02p *1/00*
U.S. Cl. 123—148 R **1 Claim**

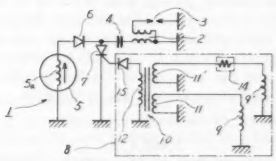


1. A solid state distribution system for the control of the ignition of spark plugs of an internal combustion engine, comprising an alternator which is linked by solid state diodes and silicon-controlled rectifiers to a capacitive discharge system that generates a pulse of high voltage electricity which is fed to each individual spark plug in turn,
   said alternator being fitted with a half-phase coil on the rotor of the alternator and with a number of individual field coils mounted on the stator of the alternator, with the number of field coils being equal to the number of spark plugs to be fired, such that
   rotation of the rotor of the alternator, bringing the rotor coil past a field coil, produces a pulse of electricity in the field coil, with
   a first lead of the two leads of the field coil being led through diodes to the input of a first silicon-controlled rectifier, and the pulse of electricity from the second lead of the individual field coils being led through diodes to the gate of the said first silicon-controlled rectifier and also led through other diodes to the gate of a second silicon-controlled rectifier in series with the spark plug to be fired, with the outut of the said first silicon-controlled rectifier led to the gate of a third silicon-controlled rectifier, the third silicon-controlled rectifier being connected to fire, in the triggered mode, the capacitative discharge system to produce a pulse of high voltage led to each of the silicon-controlled rectifiers connected individually in series with each of the spark plugs, with the said second silicon-controlled rectifier, in series with a spark plug, which is gated by the current produced from a specific field coil conducting the high tension pulse produced by the capacitative discharge system to fire the respective spark plug.

3,880,133
BREAKERLESS IGNITION SYSTEM

Mitsuo Katsumata, Numazu, Japan, assignor to Kokusan Denki Co., Ltd., Numazu, Japan

Filed Apr. 27, 1973, Ser. No. 355,013
Claims priority, application Japan, May 2, 1972, 47-51789
Int. Cl. F02p *1/00*
U.S. Cl. 123—148 E **16 Claims**



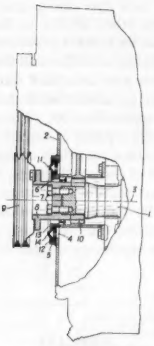
1. A breakerless ignition system for an internal combustion engine, comprising an ignition coil, an ignition plug connected to the secondary side of said ignition coil and received in the cylinder of the engine for igniting a fuel gas therein, a capacitor connected to a primary side of said ignition coil, a power source to charge said capacitor, a controlled rectifier to control the discharge of said capacitor through the primary side of said ignition coil for energization thereof, and ignition control means to supply firing current through the controlled electrode and cathode of said controlled rectifier for conduction thereof, characterized in that said ignition control means comprises at least two ignition signal sources one of which has a different characteristic of ignition in advanced phase against revolution of the engine from that of the other signal source and transformer means for compounding the signal outputs of said ignition signal sources and coupling said signal outputs to said controlled electrode, said transformer means having saturable core means for limiting the time width of signals coupled through said transformer means, whereby proper advanced ignition phase can be provided to the engine.

3,880,134

INTERNAL COMBUSTION ENGINE IN SOUND-PROOF CASING

Gerhard Thien, and Heinz Fachbach, both of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Nov. 9, 1973, Ser. No. 414,579
Int. Cl. F02b *77/00*
U.S. Cl. 123—195 C **4 Claims**



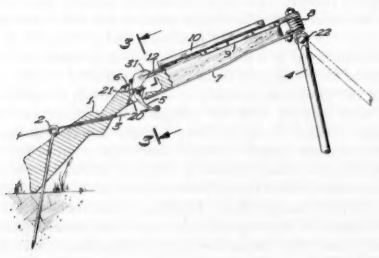
1. An internal combustion engine with a soundproof casing having casing walls surrounding the engine body and perforations provided in the casing walls for the passage of shafts and lines, comprising a tubular extension for each shaft or line surrounding the latter in concentrical relation thereto and protruding from said engine body and extending as far as into the perforation for the passage of the associated shaft or line, an elastic packing sealing the perforation off against the outside and formed as an annular element comprising an inner metal ring, an outer metal ring in concentrical relation to the former and an annular arcuate membrane of an elastic, oil- and heat-resistant material, said membrane being vulcanized between said inner and said outer metal ring, said inner metal ring being tightly attached to said tubular extension of the engine body, and the outer metal ring being tightly attached to the casing wall in the area of the perforation.

3,880,135

CENTRIFUGAL SPRING TYPE ARTICLE PROJECTING DEVICE

Edward J. Martin, 4909 Fremont Ave., Minneapolis, Minn. 55409

Filed Jan. 22, 1973, Ser. No. 325,870
Int. Cl. F41b *7/00*
U.S. Cl. 124—8 **7 Claims**



1. A shoulder of ground-mountable throwing apparatus for throwing targets, comprising:

a. a stock having a rearwardly-extending, shoulder-fitting end and having an upper and lower bracket attached to its respective upper and lower edges and projecting beyond its forward end;

b. a target holder having a shape adapted for holding a target;

c. a coil spring mounted between said upper and lower brackets, and an eyebolt passing between the brackets and spring and mounting the spring between the brackets, said spring having one of its ends fixedly attached to one of said brackets and having at its other end spring end means projecting outwardly from said brackets to permit the target holder to have a whipping action during a target throwing operation; said target holder being clamped to said spring end means at a distance removed from said brackets; the spring end means providing the sole permanent connection between the target holder and the brackets and providing the target holder with an otherwise unrestrained path of movement during a target throwing operation, and

d. a latch arm at the target holder end furthest removed from said coil spring for moving said target holder to a position adjacent said stock in opposition to the torsional winding spring force of said coil spring;

e. a trigger mechanism pivotally mounted to said stock, said mechanism having an upper shoulder positioned to encounter and restrain said latch arm, and a lower trigger member retractable rearwardly to cause said upper shoulder to recede and release said latch arm;

f. a pair of support legs connected to the bracket at the forward end of the latter for supporting the forward end of the apparatus above a mounting surface; and

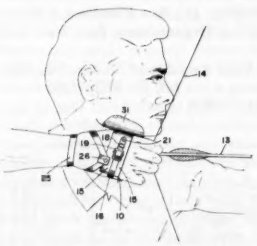
g. means for securing said rearwardly extending shoulder-fitting end of the stock to a mounting surface.

3,880,136

ARCHER'S STEADY REST

Ivan P. Leidy, 478 Nimick St., Sharon, Pa. 16146

Filed Nov. 7, 1973, Ser. No. 413,559
Int. Cl. F41b *5/00*
U.S. Cl. 124—30 R **4 Claims**



1. An archery accessory for use by an archer in shooting an arrow by use of a bow having a bow string, said accessory being adapted to be worn on that hand which pulls back and releases said bow string and arrow, and in use being free of connection to said bow string and arrow so that the fingers of the archer's hand may cooperate with the bow string and arrow in conventional manner, said accessory comprising:

means for connecting the accessory to a archer's hand, comprising a U-shaped member formed of thin, rigid material and providing a bight portion and a pair of legs, one leg being relatively narrow and adapted to fit crosswise and within the palm of a hand and the other leg being wider and shaped to fit crosswise of and over the back of a hand rearward of the knuckles, said bight portion being adapted to fit over the top of a hand,

a shaped member of thin, rigid material connected to said bight portion and extending upwardly therefrom, said shaped member being conformed to fit comfortably against a side portion of the chin of the archer.

a first strap connected to said one leg and a second strap connected to said other leg, said straps having buckle connection so that they may be drawn taut to underlie the underside of a hand and firmly hold said accessory on a hand,

and a third strap having an intermediate portion secured to one of said legs, said third strap being adapted to be wrapped about the wrist of the archer and its free ends joined by a buckle connection.

3,880,137

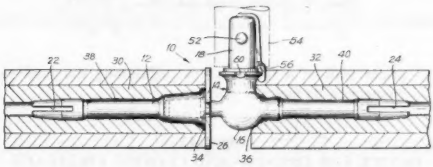
TWO-PIECE IMPLANTS

Louis Bucalo, Holbrook, N.Y., assignor to Louis Bucalo, Holbrook and Investors In Ventures, Inc., New York, both of, N.Y.

Division of Ser. No. 332,019, Feb. 12, 1973. This application Apr. 26, 1974, Ser. No. 464,637

Int. Cl. A61b *19/00*

U.S. Cl. 128—1 R **3 Claims**



1. An implant to be introduced into a tubular organ of a living being after the tubular organ has been divided into a pair of separate portions having free ends situated adjacent each other, said implant comprising a pair of parts one of which is to be introduced into the lumen of one of the separate portions and the other of which is to be introduced into the lumen of the other of the separate portions of the tubular organ, said parts remaining accessible at free ends of said separate portions of the tubular organ, and means operatively connected with said parts of the implant for connecting them to each other at the region of the free ends of the separate portions of the tubular organ for operatively connecting said parts of said implant to each other and render the implant operative after the parts thereof have been separately implanted, the tubular organ being a vas deferens and the implant being a vas valve, and said parts being respectively constituted by a tubular component which forms one of the parts and the remainder of the vas valve, said means for connecting said parts to each other including male and female tapered mating portions of said parts which fit together with a tight wedge fit, said one part of said vas valve being an elongated tubular component having a female portion of said means and terminating at said female portion of said means in an outwardly directed flange which forms a barrier.

3,880,138

METHOD FOR INJECTING CONTRAST MEDIA INTO THE VASCULAR SYSTEM

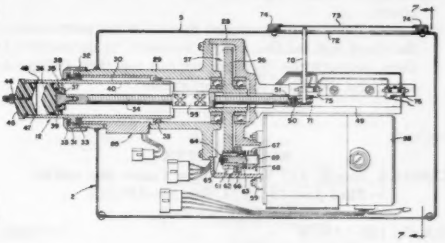
John A. Wootten, South Euclid, and George S. Rives, North Ridgeville, both of Ohio, assignors to Lear Siegler Inc., Elyria, Ohio

Division of Ser. No. 340,226, March 12, 1973, Pat. No. 3,812,843. This application Jan. 21, 1974, Ser. No. 434,847

Int. Cl. A61b *6/00;* **A61m** *5/00, 5/20*

U.S. Cl. 128—2 A **11 Claims**

1. A method of injecting a fluid into the vascular system of a mammal comprising the steps of filling a syringe with the desired quantity of fluid to be injected, providing a bolus of said fluid in the vascular system during one cycle by moving a motor driven piston mounted for axial movement within the syringe for expelling such bolus of fluid therefrom, and controlling the movements of such piston to cause the piston to automatically sequentially advance at more than one rate of speed of advance movement within the syringe for different



periods of time during such one cycle of advance movement of such piston.

3,880,139

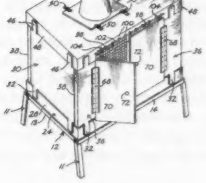
TRANSPORTABLE CAMPER FIREPLACE

Glenn A. Young, 417 K St., Medford, Oreg. 97501

Filed June 22, 1973, Ser. No. 372,483

Int. Cl. F24c *1/16, 15/00*

U.S. Cl. 126—9 R **4 Claims**



1. A knockdown combined camper fireplace and stove designed to generate and efficiently to project and reflect radiant heat to the area in front of the fireplace, comprising, in combination,

a. a supporting stand which includes a rigid frame of isosceles, trapezoidal form, composed of angle bars having inwardly extending horizontal webs and vertical upwardly extending peripheral webs, the front angle bar being parallel to, and longer than, the rear angle bar, and the side angle bars diverging significantly from rear to front, and supporting angle bar legs permanently foldably connected to the frame for adjustment between upstanding positions and positions in which they snugly fit throughout their lengths against certain of the angle bars,

b. a body tray of isosceles trapezoidal form that fits removably into the stand frame, said tray having continuous upstanding flanges along the front, back and sides,

c. a cover of substantially the same horizontal shape and dimensions as the body tray and having continuous downturned flanges along the front, back and sides,

d. lateral wall members including integral sides, an integral back and a plurality of narrow front parts, each of said lateral wall members having as integral parts thereof upper and lower offset tongues cooperative with normal parts of said wall members to grip the flanges of the cover and of the body tray, respectively, in providing a stable and dependable assembly,

e. wrap-around flanges on at least one of each pair of joint forming meeting lateral members for stabilizing said members and covering the joint,

f. a flue,

g. means detachably securing the flue to the cover, and

h. cooperative latching means on the stand frame and the cover,

the parts being so dimensioned that all of the parts except the stand and the flue can be received, in disassembled form, between the opposed, latched together, collapsed stand and the cover for transportation.

3,880,140

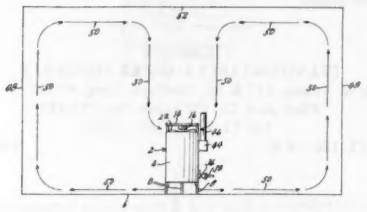
ROOM HEATER

Clifford A. Scogin, 427 Vassar, Sugar Creek, Mo. 64053

Filed Jan. 28, 1974, Ser. No. 437,315

Int. Cl. F24b *7/00*

U.S. Cl. 126—110 R **2 Claims**



1. A room heater adapted to be disposed in a free-standing position within the room space to be heated, and comprising:

a. a housing open at both top and bottom directly to the room space to be heated, and including means spacing the open lower end thereof above the floor of said room space,

b. a combustion chamber mounted within said housing, an air passage surrounding said combustion chamber and opening through the top and bottom of said housing being formed between said housing and said combustion chamber,

c. means operable to burn fuel within said combustion chamber,

d. means operable to direct air entering the top of said housing from said room space downwardly through said air passage to be discharged downwardly from the lower end of said housing to said room space, and

e. vane means disposed in said air passage and operable to impart a whirling motion to air moving downwardly through said passage around an axis parallel to said downward movement, whereby air is ejected from the lower end of said housing with a motion having both vertically downward and radially outward components.

3,880,141

HEATING SYSTEMS FOR FIREPLACES

Harold R. Abshear, P.O. Box 4734, Whittier, Calif. 90607

Filed Feb. 21, 1974, Ser. No. 444,685

Int. Cl. F24b *7/00*

U.S. Cl. 126—121 **6 Claims**

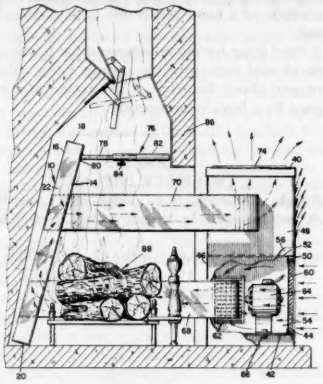
1. Heating systems for fireplaces, comprising:

a heat exchanger adapted to be disposed at the rear of the fireplace opening; a horizontal partition separating the interior of the heat exchanger into a lower chamber and an upper chamber, there being a flow passage between the lower and upper chambers;

means for introducing air to be heated into one of said chambers and an outlet for heated air for the other chamber;

a plurality of secondary baffles in each of said chambers for causing air passing through the chambers to be agitated; said heat exchanger being inclined upwardly and forwardly;

and an adjustable brace for the upper end of the heat exchanger, said brace being adapted to engage the front



upper wall of a fireplace for positioning the heat exchanger in its inclined position.

3,880,142

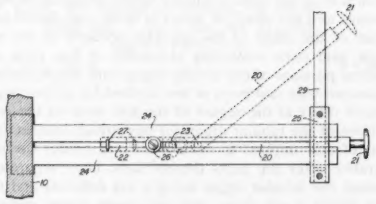
DEVICE FOR OPENING AND CLOSING FIREPLACE DAMPER

Robert V. Fowles, 891 E. 250 South, Bountiful, Utah 84101

Filed Dec. 19, 1973, Ser. No. 426,231

Int. Cl. F23l *13/02*

U.S. Cl. 126—288 **3 Claims**



1. A device by which the lever arm of a fireplace damper can be operated from outside the fireplace and which also provides a visual indication of the position of the fireplace damper, said device comprising an elongate push-pull member; connecting means for connecting one end portion of said push-pull member to the end of the lever arm of the fireplace damper, said connecting means being adapted so that the push-pull member can pivot around the end of said lever arm about a substantially vertical axis and so that said lever arm can pivot around said one end of the push-pull member about a substantially horizontal axis when the device is installed in a fireplace; and supporting guide means comprising an elongate bar which is adpated for attachment to the fireplace substantially parallel with the lintel of the fireplace, said push-pull member being supported by said elongate bar so that the free end thereof extends from the fireplace with said push-pull member being guided by said elongate bar through a generally rectilinear movement toward and away from the fireplace in a direction generally transverse of said elongate bar, as well as through a pivotal movement about the end thereof which is pivotally connected to said lever arm, whereby said fireplace damper can be opened by grasping the free end of the push-pull member, pulling it in a direction away from the fireplace so that said push-pull member moves in a generally rectilinear motion in a direction generally transverse of said elongate bar, thereby moving the lever arm of said fireplace towards the front of the fireplace which in turn opens said damper, the

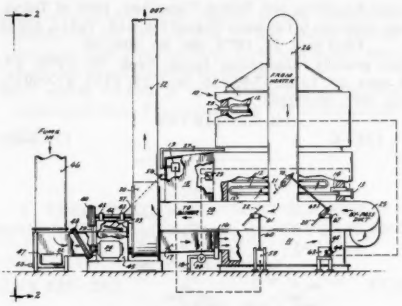
push-pull member is then rotated in a generally horizontal plane about the end thereof which is pivotally attached to said lever arm, until the free end thereof is brought adjacent to the face of the fireplace, and whereby said fireplace damper can be closed by grasping the free end of the push-pull member, rotating the push-pull member until it is generally in alignment with said lever arm, and pushing the push-pull member in a generally rectilinear motion toward the fireplace in a direction generally transverse of said elongate bar, thereby moving the lever arm of said fireplace towards the back of the fireplace which in turn closes said damper.

3,880,143

COMBINATION FUME OXIDIZER AND ASPHALT HEATER

Wallace L. Hart, Evanston; Gordon D. Vevang, Arlington Heights, and Herman J. Walkowicz, Mount Prospect, all of Ill., assignors to U.I.P. Engineered Products Corporation, Elk Grove Village, Ill.

Filed Feb. 21, 1973, Ser. No. 334,257
Int. Cl. E01c *19/45*
U.S. Cl. 126—343.5 A **18 Claims**



1. A combined fume oxidizer and asphalt heater comprising: means defining a heating chamber; fluid conduit means disposed in said heating chamber for flowing fluids into and out of said chamber for heating said fluids; a burner element for combusting fluid fuels in fluid communication with said chamber; means to supply fluid fuel to said burner element; an intake duct in communication with said burner element; an exhaust duct open at one end with the atmosphere and at the other end with said heating chamber; a by-pass duct in fluid communication with said chamber and said exhaust duct; means to supply with force combustible flowable fumes to said intake duct for combustion by said burner element and means to regulate the flow of said combusted fumes through said by-pass duct and said heating chamber.

3,880,144

METHOD FOR STIMULATION AND RECORDING OF NEUROPHYSIOLOGIC DATA

David B. Coursin, 1503 Hillcrest Rd., Lancaster, Pa. 17604, and Anthony Marmarou, 7 Valley Rd., Norristown, Pa. 19401

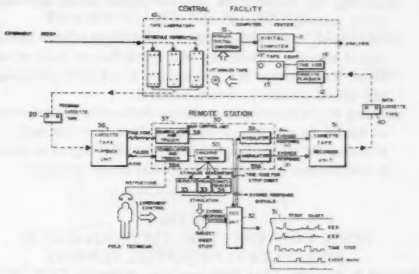
Division of Ser. No. 340,560, March 12, 1973. This application Feb. 4, 1974, Ser. No. 439,245
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.1 B **7 Claims**

1. A method of collecting neurophysiological data at a remote station in a form for analysis of said data comprising the steps of:

recording electronic control signals and audio instructions on a first tape at a processing facility away from said remote station;

playing back said first tape at said remote station;

operating stimulus generators in accordance with instructions on said first tape at said remote station;



recording electronically the physiologic or behavioral response on a strip chart and on a second tape at said remote station; transferring the responses on said second tape at a processing facility onto recording means compatible for feed into a computer;

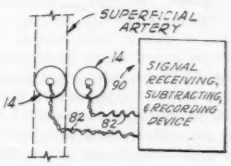
and analyzing the material fed to said computer.

3,880,145

METHOD AND APPARATUS FOR CONTINUOUSLY MONITORING BLOOD PRESSURE

Edward F. Blick, Norman, Okla., assignor to Paul D. Stein, Oklahoma City, Okla., a part interest

Filed Oct. 2, 1972, Ser. No. 293,991
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 A **3 Claims**



1. A non-invasive method of providing a continuous direct indication of the arterial blood pressure of a patient at a continuously unoccluded superficial artery without the necessity of detecting Korotkov sounds, comprising the steps of:

positioning a first force sensing transducer on the skin surface of the patient directly over and not occluding the continuously unoccluded superficial artery;

positioning a second force sensing transducer on the skin surface of the patient alongside, but not over, the superficial artery;

directly sensing, with the first force sensing transducer, physical arterial geometric distorions of the superficial artery indicative of blood pressure variations within the superficial artery in addition to force components not originating as a result of arterial blood pressure variations;

directly sensing, with the second force sensing transducer, said force components not originating as a result of said arterial blood pressure variations;

sending a continuous first signal from the first force sensing transducer, with the first force signal including a component indicative of the pressure of blood in the superficial artery and a component representing said force components not orginating as a result of said arterial blood pressure variations;

sending a continuous second signal from the second force sensing transducer, the second signal including a compo-

nent indicative of said force components not originating as a result of said arterial blood pressure variations;

receiving the continuous first signal from the first force sensing transducer;

receiving the continuous second signal from the second force sensing transducer;

continuously subtracting the second signal from the first signal thereby cancelling the components indicative of force components not originating as a result of said arterial blood pressure variations; and

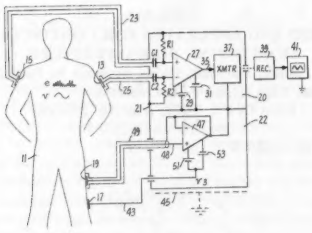
utilizing the remaining component indicative of the pressure of blood in the artery obtained from continuously subtracting the second signal from the first signal to provide a continuous indication of arterial blood pressure.

3,880,146

NOISE COMPENSATION TECHNIQUES FOR BIOELECTRIC POTENTIAL SENSING

Donald B. Everett, 1941 Hillman Ave., Belmont, Calif. 94002, and Louis W. Schlenz, 809 Ladis Ct., Sunnyvale, Calif. 94086

Filed June 4, 1973, Ser. No. 366,338
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 B **10 Claims**



4. A method of developing a voltage signal that is proportional to electrostatic voltage variations on a body for use in noise compensation, comprising the steps of:

attaching a first electrode to said body and electrically connecting the first electrode with an amplifier common, and

attaching a second electrode to said body and electrically connecting it to a high impedance input of an amplifier that shares said amplifier common, whereby an amplifier output developes said voltage signal proportional to body surface voltage changes.

3,880,147

R-R INTERVAL HISTOGRAM INSTRUMENT SYSTEM

Roger A. Gruenke, Columbus, Ohio, and Roy J. Lahr, Sierra Madre, Calif., assignors to Xerox Corporation, Rochester, N.Y.

Filed Mar. 22, 1973, Ser. No. 343,747
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 A **7 Claims**

1. An apparatus for generating an R-R interval histogram comprising:

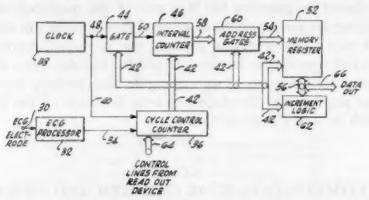
data collection means including,

means for measuring the time intervals between the R portions of an electrocardiogram waveform,

means for determining the number of predetermined time periods which elapse during each of said time intervals, means for generating time interval range signals corresponding to said numbers,

means for storing said range interval signals as accumulating counts in a plurality of addressable counters with an address for each counter corresponding to a particular time interval range; and

readout means selectively connectable to said data collection means including,



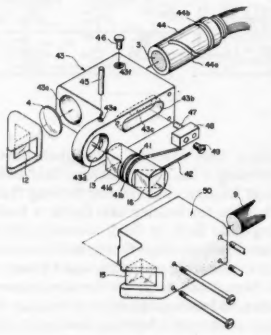
means for addressing said addressable counters and reading out said counts stored therein, means for displaying said readout counts as a bar graph having range intervals along one axis and corresponding counts along the other axis.

3,880,148

ENDOSCOPE

Katsuyuki Kanehira, and Nobuo Yamashita, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sept. 24, 1973, Ser. No. 400,195
Claims priority, application Japan, Sept. 25, 1972, 47-95935; Sept. 25, 1972, 47-95936; Sept. 25, 1972, 47-95937; Sept. 12, 1973, 48-102202
Int. Cl. A61b *1/06*
U.S. Cl. 128—6 **13 Claims**



1. An endoscope comprising a first optical fiber element for transmitting an image of an object, an objective arranged at one end of said first optical fiber element for forming the image of the object, a first reflecting element arranged in front of said objective for deflecting the light from said object, a second reflecting element arranged for deflecting the light from the object toward said first reflecting element, and a means for rotating said second reflecting element upward and downward around an axis along an optical path between said first and second reflecting elements.

3,880,149

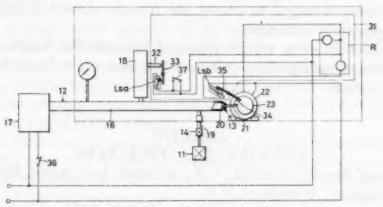
BLOOD CIRCULATION STIMULATING APPARATUS

Mamoru Kawaguchi, 100, Shimo-Nakashima, Arita-shi, Wakayama-ken, Japan

Filed Dec. 28, 1973, Ser. No. 429,292
Claims priority, application Japan, Jan. 25, 1973, 48-10751
Int. Cl. A61h *1/00*
U.S. Cl. 128—24 R **2 Claims**

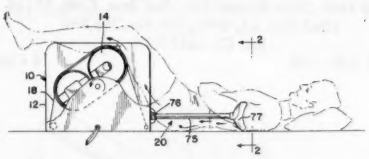
1. A blood circulation stimulation apparatus comprising:

an air tight suit-like bag conformed to fit the human body;
compressed air supply means for supplying compressed air from a source at a predetermined pressure;
a conduit connecting said compressed air supply means to said bag for supplying compressed air to said bag;
control means for regulating the pressure buildup and the exhaust of the compressed air from the apparatus;



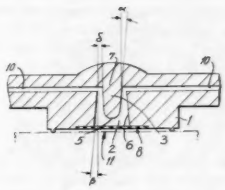
a one-way exhaust valve located in said compressed air supply means and coupled to said control means for releasing said compressed air from said supply means in response to said control means; and
valve means located in said conduit for controlling the directional flow of compressed air into and out of said air bag.

3,880,150
THERAPEUTIC TREATMENT MACHINE
Matthew J. Vileikis, 5144 S. Mason Ave., Chicago, Ill. 60638
Filed Nov. 8, 1973, Ser. No. 414,153
Int. Cl. A61h *29/00*
U.S. Cl. 128—24.3 **3 Claims**



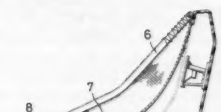
1. A therapeutic machine comprising a supporting frame having spaced upright members, and a rotatable assembly mounted between said upright frame members which includes a pair of elongate members in the form of cylinders arranged in side-by-side relation so as to present axially extending, exterior, curved surfaces, plate members connecting corresponding ends of said cylinders, means mounting said assembly for rotation on an axis which is parallel to the axes of the cylinders, said axis of rotation being arranged relative to the axes of the cylinders in triangular relation so as to effect eccentric rotation of the cylinder assembly, means for rotating said assembly at a relatively slow rate of speed so as to subject a part of the body placed against the exterior curved surfaces of the cylinders to physical therapy, and a readily removably, flexible, body protecting curtain which is spring roller mounted on said supporting frame relative to said assembly and which may be drawn so that it is draped over said assembly and when said assembly rotates beneath said curtain the body of the user is not in direct contact with the rotating assembly.

3,880,151
PRESSURE RECEIVER
Kenth Ake Sune Nilsson, Akersberga, and Erik Olof Roland Larsson, Sollentuna, both of Sweden, assignors to Siemens-Elema AB, Solna, Sweden
Filed July 6, 1973, Ser. No. 376,932
Claims priority, application Sweden, July 12, 1972, 9166/72
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 E **8 Claims**



1. Pressure receiver for the measurement of intravascular pressure and the pressure of body fluids or the like; said pressure receiver comprising, a pressure chamber, and pressure sensing means communicating with said pressure chamber, said pressure chamber including a frusto-conical recess portion, a conical member symmetrically projecting into said frusto-conical recess having a slope opposite to that of the frusto-conical recess, said conical member having the sloped conical surface thereof extending into a substantially spherically curved end surface at its smaller conical end portion, the annular surface of the conical member being at a radially spaced distance from the smaller annular apex surface of the frusto-conical recess and the spherically curved surface of said conical member being an axially spaced distance from the larger annular base surface of said frusto-conical recess, passageways communicating with said pressure chamber proximate the larger annular base surface of said conical member at the smaller annular base surface of said frusto-conical recess, and substantially planar separating means being provided at the larger base surface of said frusto-conical recess intermediate said pressure sensing means and said pressure chamber, said passageways extending in parallel with said substantially planar separating means.

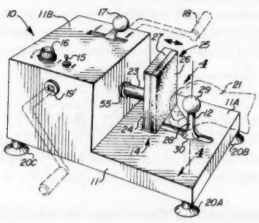
3,880,152
DEVICE FOR HEALTH PROMOTION
Ryotaro Nohmura, 19-19, 3-chome, Senriyama-nishi, Suita-shi, Osaka-fu, Japan
Filed Oct. 29, 1973, Ser. No. 410,414
Claims priority, application Japan, July 16, 1973, 48-85340
Int. Cl. A61h *1/00*
U.S. Cl. 128—33 **3 Claims**



1. A therapeutic apparatus comprising:
a structural support framework;
flexible sheet means extended over said framework for supporting a body lying on said apparatus; and
loud speakers within said framework narrowly spaced below and directed toward said flexible sheet means, whereby

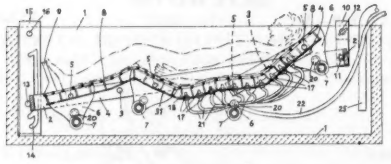
sound vibrations eminating from said speakers will cause said flexible surface to vibrate.

3,880,153
HAND-CONDITIONING APPARATUS
Walter E. Perrine, 3001 N. 55 Dr., Phoenix, Ariz. 85031
Filed Oct. 29, 1973, Ser. No. 410,786
Int. Cl. A61h *7/00*
U.S. Cl. 128—52 **5 Claims**



1. An apparatus for providing hand conditioning impacts on the hand of a user comprising:
a frame,
a reciprocating ram having a hand engaging surface at one end mounted on said frame,
means for controlling the reciprocating movement of said ram, and
means for positioning and supporting the hand of the user in the path of movement of said ram for receiving impacts of said ram on the hand of the user,
said means for positioning and supporting the hand of the user comprises a support adjustably positioned on said frame at one of a number of positions within the path of movement of said ram,
said support comprises an object around which the hand of the user may grasp is within the path of movement of said ram.

3,880,154
APPARATUS FOR THE UNDERWATER MASSAGE TREATMENT OF A PATIENT
Kurt Gabmeier, Andreas Hoferstrasse 2-4/2/3/10, A-1210 Vienna, Austria
Filed Apr. 15, 1974, Ser. No. 460,683
Claims priority, application Austria, Apr. 17, 1973, 3421/73
Int. Cl. A61h *9/00*
U.S. Cl. 128—66 **9 Claims**

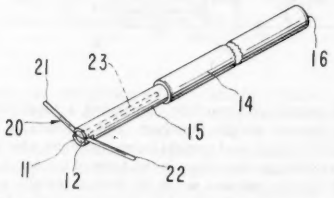


1. An apparatus for massage treatment of a patient immersed in bath liquid, comprising the combination of
1. a bath tub containing the bath liquid,
2. a carrier frame freely movable into and out of the bath tub,
3. a flexible, wide-meshed support for the patient mounted on the carrier frame,
4. a plurality of nozzles for producing jets of liquid spaced from each other and below the support,
a. the jets being impinged upon the patient through openings in the support,
5. flexible connecting means for suspending the nozzles from the support,
a. the carrier frame, support and nozzles constituting an immersible unit for free movement into and out of the bath tub,
6. a pumping means for circulating the bath liquid from the bath tub to the nozzles, the pumping means being stationarily mounted outside the bath tub,
7. flexible hoses connecting respective ones of the nozzles to the pumping means for delivering the bath liquid thereto and producing the jets of liquid, the flexible hoses being arranged to permit the free movement of the immersible unit, and
8. control valve means arranged between the nozzles and the pumping means to control the flow of the liquid to the nozzles.

3,880,155
THERAPEUTIC APPLIANCES
Samuel Rosoff, Yonkers, N.Y., assignor to General Electric Company, Waterford, N.Y.
Continuation of Ser. No. 187,526, Oct. 7, 1971, abandoned, which is a continuation of Ser. No. 52,089, July 2, 1970, abandoned. This application Aug. 24, 1973, Ser. No. 391,205
Int. Cl. A61f *5/04*
U.S. Cl. 128—90 **5 Claims**

1. A therapeutic integral bandage composite suitable for application adjacent to the skin of the human limbs for imparting protection thereto comprising,
a. a bandage material formed to fit the surface of a segment of the skin of a human, and
b. coated with a one-part room temperature vulcanizable silicone rubber composition which vulcanizes at room temperature in the presence of atmospheric moisture to form a silicone rubber composition which comprises a silanol-terminated polydimethylsiloxane in the range of 10,000 centipoise viscosity at 25°C, fumed silica, a process aid, methyltriacetoxysilane, di-t-butoxydiacetoxysilane and dibutyl tin dilaurate.

3,880,156
INSERTER FOR CONTRACEPTIVE DEVICE
Seymour Hoff, 5339 Brenda Ave., San Jose, Calif. 95124
Filed Nov. 21, 1972, Ser. No. 308,596
Int. Cl. A61f *5/46*
U.S. Cl. 128—130 **4 Claims**



1. A one piece inserter for an intrauterine contraceptive device comprising a transverse member and a leg member depending therefrom, wherein the inserter essentially consists of:
a. an elongated rounded member having a leading end and a trailing end distant from the leading end,
b. a receiving notch in the terminus of the rounded member at its leading end, said notch adapted to orient the intrauterine device and to receive a part of the intrauterine contraceptive device,
c. a hollowed area continuous with the notch internally extended within the rounded member a sufficient length and adapted to receive internally a part of the intrauter-

ine contraceptive device when a device is positioned in the notch,

d. and wherein the rounded member at its leading end has a smaller circumference than the trailing end which smaller circumference is extended along a section of the member, with the smaller circumference exteriorly forming a reduced leading end adapted to exteriorly receive a part of the intrauterine contraceptive device in nested relation to the reduced leading end of the rounded member when an intrauterine contraceptive device is placed in the notch and hollowed area of the single piece inserter.

4. A single piece inserter for an intrauterine contraceptive device and an intrauterine contraceptive device essentially shaped like a "T" essentially consisting of in combination:

a. a tubular member having a leading end and a trailing end distant from the leading end and made from a biologically inert acceptable material,

b. a notch in the leading end at the terminus of the tubular member as a means for positioning and housing a part of an intrauterine contraceptive device in the inserter,

c. a hollowed internal area formed by the inner surface of the wall of the tubular member with the area extended from the notch at the leading end for internally receiving in cooperation with the notch a part of an intrauterine contraceptive device,

d. a section of smaller circumference extended along the exterior of the tubular member from its leading end for exteriorly closely receiving in coöperation with the notch and the internal hollowed area a part of an intrauterine contraceptive device, and wherein the inserter houses in nested relation,

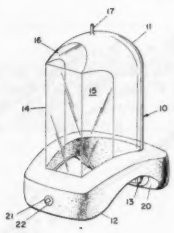
e. an intrauterine contraceptive device shaped like a "T" having a cross bar and depending leg with the depending leg in the hollowed area, the cross bar in the notch and for downwardly positioning along the smaller circumference of the one piece inserter.

3,880,157

DIVING HELMET ASSEMBLY

C. James Elifritz, Windsor, Wis. 53598

Filed Jan. 17, 1974, Ser. No. 434,363
Int. Cl. A62b *18/04*
U.S. Cl. 128—142.7 **7 Claims**



1. A diving helmet assembly which comprises:

a. A substantially dome shaped one piece helmet having an open bottom end, said helmet being of fluid-impervious transparent plastic material;

b. a collar adapted to fit around said helmet, said collar having a hollow interior and an opening to receive ballast material therein;

c. means for removably engaging said collar on said helmet to counteract the buoyancy of the air-filled helmet in water, and

d. means on said helmet for connecting a hose to supply air from the exterior to the interior of said helmet when said helmet is submerged in water.

3,880,158

SPRAY-SPUN BANDAGE COMPOSITION

John A. Gurney, East Brunswick, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Apr. 4, 1974, Ser. No. 457,875
Int. Cl. A61f *13/00*
U.S. Cl. 128—155 **2 Claims**

1. A bandage composition for dispensing a fibrous covering for a wound from aerosol containers comprising:

about 1.5 to 10% by weight of the bandage composition of an A–B–A block copolymer wherein (1) said A block is polystyrene having an average molecular weight of from 2,000 to 100,000 and a glass transition temperature of at least 33°C and constituting about 10–50% of the total copolymer weight and (2) said B block is selected from the group consisting of polyisoprene and polybutadiene, said B block having a molecular weight of from 25,000 to 1,000,000 and a glass transition temperature of less than 10°C;

about 2–10% by weight of said bandage composition comprising a mixture of acetone and cyclohexane, said mixture comprising no less than 30% by weight of said acetone; and

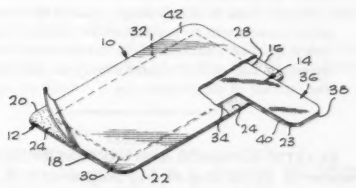
a propellant comprising 75–95% by weight of the bandage composition, a portion of said propellant comprising no more than 10% by weight of said bandage composition being capable of independently developing a pressure of at least 70 pounds per square inch guage at 20°C, said propellant and said acetone-cyclohexane mixture having together a solubility parameter of from about 7.3 to about 10.

3,880,159

MULTIPURPOSE FLAT BANDAGE

Jules B. Diamond, 5130 Yarmouth Ave., Encino, Calif. 91316

Filed June 21, 1973, Ser. No. 372,056
Int. Cl. A61f *13/10*
U.S. Cl. 128—157 **4 Claims**



1. A flat bandage comprising:

a substantially rectangular cover layer having an exterior surface and a front surface and having its main body defined by end edges and side edges;

a rectangular bandage pad positioned against said front surface of said cover layer and having first, second, third and fourth edges, said bandage pad having a width between said first and third edges at least as great as that required to wrap completely around two digits, said cover layer extending beyond said bandage pad along said first, second and third edges and a portion of said fourth edge, pressure-sensitive adhesive on that portion of said front surface which extends beyond said bandage pad so that said bandage can be secured;

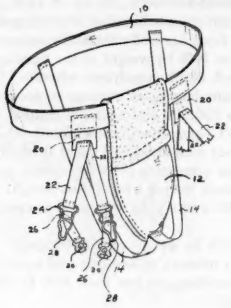
said bandage pad having a bandage pad tab portion extending past said fourth edge to form a bandage pad tab, said bandage pad tab having an edge aligned with said third edge of said bandage pad and width about equal to that of two digits, said tab width being less than one-third of said bandage pad width, said cover layer extending coextensively with said bandage pad tab.

3,880,160

ATHLETIC SUPPORTER WITH SOCK SUPPORTS

Gwendolyn Hall, 60 Redcar Ave., Islington, Ontario, Canada

Filed July 27, 1973, Ser. No. 383,141
Int. Cl. A41b 9/12
U.S. Cl. 128—158 1 Claim



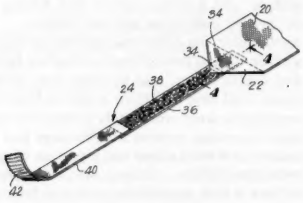
1. A hockey garment comprising:
an athletic supporter,
said athletic supporter including:
an elastic waist band,
a pouch suspended from the front portion of said waist band,
said pouch being provided with a pocket designed to carry a protective cup,
two leg straps, each attached at one end to said pouch and at the other end to the rearward portion of said waistband,
a pair of sock support straps attached to the front of said waist band on each side of and adjacent to said pouch,
whereby each said pair of sock support straps will depend from said waist band at the front of the wearer's body when the garment is worn,
and means on each of said straps, spaced from said band, to allow attachment to hockey socks, whereby each pair of straps may be attached to the hockey sock on the corresponding side of the wearer's body on the inside and on the outside of the wearers leg.

3,880,161

ELASTIC BANDAGE AND FASTENER THEREFOR

Spencer M. Fossel, Rupert, Vt., assignor to J. H. Guild Co., Inc., Rupert, Vt.

Filed May 2, 1974, Ser. No. 466,411
Int. Cl. A61f 13/00
U.S. Cl. 128—165 6 Claims



1. A bandage-fastener combination comprising an elongated web of elastic sheet material adapted to be wrapped around a body part, flexible but non-stretchable sheet means fixed to said web at one end region thereof and extending across the entire width of said web, and elongated flexible but non-stretchable fastener tape means fixed to said sheet means midway between opposed side edges of said web and extending from said sheet means beyond said web along a line which when extended along said web will be situated substantially midway between said opposed side edges thereof, so that after said web is wrapped around a body part starting with an end of said web distant from said sheet means, said sheet means will be located at the exterior of the wrapped web and said fastener tape means can be wrapped around the web for fastening the latter on the body part, said sheet means transmitting a tension force to said web uniformly across the entire width thereof.

3,880,162

POLE-SYRINGE FOR INJECTING FROM A REMOTE DISTANCE

Lee G. Simmons, 103 Wright St., Omaha, Nebr. 68124

Filed Apr. 25, 1973, Ser. No. 354,244
Int. Cl. A61m 5/18
U.S. Cl. 128—218 R 4 Claims

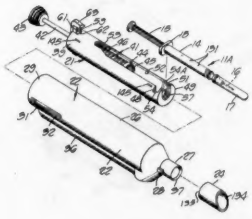
1. A syringe device for administering hypodermic injections, the device comprising:
an elongated open ended sleeve;
a plug mounted in one end of said sleeve and having an inner end and an outer exposed end, said plug having a hole formed therethrough from end to end, said hole being radially enlarged proximate said outer end to provide said plug with an annular convex surface from said hole to said outer end; and
a hypodermic syringe having an elongated barrel, a needle hub affixed to one end of said barrel, a needle mounted on said hub, and an elongated plunger slidably mounted in the other end of said barrel; said syringe slidably mounted in said sleeve with said hub abutting said plug inner end and said needle projecting through said hole.

3,880,163

MEDICINAL SYRINGE ACTUATING DEVICE

Jack H. Ritterskamp, 1523 Princeton St., Santa Monica, Calif. 90404

Filed Oct. 26, 1973, Ser. No. 409,852
Int. Cl. A61m 5/20
U.S. Cl. 128—218 F 16 Claims



1. A hypodermic syringe actuator for use with a conventional syringe having a case for fluid, a case flange at one end thereof, a fluid-expelling plunger, a hypodermic needle and a protective needle cap, the actuator comprising an elongate outer body, a front body opening, a rear body opening, an inner cylinder movable longitudinally in the outer body, a spring holder on said outer body, a bearing leg on said inner cylinder, a spring between the holder and the leg, the leg and holder being urged apart by the spring to springload said inner cylinder for motion longitudinally of said body toward the front opening; means releasably securing said inner cylinder in springloaded condition in said outer body, a syringe-receiving carrier removably lodged in said inner cylinder, means for

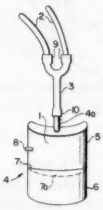
latching said carrier to move with said inner cylinder, means for unlatching said carrier from said inner cylinder to move therein, retraction means biasing said carrier along said inner cylinder; syringe-receiving means at one end of said carrier adapted to grip the syringe at its case flange, a syringe plunger actuator extending from the other end of said carrier, spring means biasing said plunger actuator toward said syringe-receiving means; a latch defeating means operable during elongate motion of the inner cylinder and carrier toward the forward body opening; means limiting motion of the carrier with respect to the inner cylinder, and means limiting motion of the inner cylinder with respect to the outer body.

3,880,164

OSMOTIC WOUND DRAIN

Norman Howard Stepno, Alexandria, Va., assignor to Alza Corporation, Palo Alto, Calif.

Filed May 22, 1972, Ser. No. 255,438
Int. Cl. A61m *1/00*
U.S. Cl. 128—276 **8 Claims**



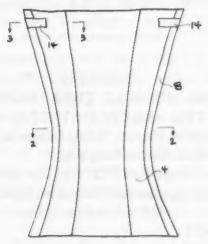
1. An evacuator device for the extraction of body fluids, said device comprising body fluid receiving means adapted to be inserted into the area of a wound and comprised of membrane material exhibiting controlled permeability to water, and means for collecting such water that flows by osmosis across said membrane in a tendency towards osmotic equilibrium with the environment of the device, said body fluid receiving means and said collecting means being filled with a solution of an osmotically effective solute which exhibits an osmotic pressure gradient against water, said water collection means including a freely flexible, water impermeable diaphragm.

3,880,165

DISPOSABLE DIAPER WITH T-SHIRT HOLDING MEANS

Rose Prizzia, Weeds Mill Rd., Highland, N.Y. 12528

Filed May 20, 1974, Ser. No. 471,481
Int. Cl. A61f *13/18, 13/16*
U.S. Cl. 128—284 **3 Claims**



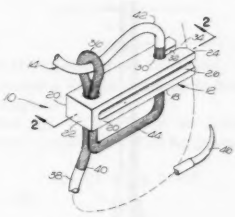
1. A diaper comprising a body of flexible material for folding through the crotch and securing around the waist of an infant, a means for securing the side edges of the inside body-engaging face of the diaper together and providing a means for holding down a shirt-like garment in position on the body comprising having mounted on each side edge adjacent one end thereof a tape having pressure-sensitive adhesive on both faces thereof, and a removable cover layer on the exposed face of the tape on the inside of the diaper and a second cover layer on the outside exposed face of said tape, said second cover layer comprising two portions defined by a separation means adjacent the outer end of said tape, the portion of the second cover layer between said separation means and the outer end being removable for selectively exposing that portion of the shirt-like body garment so that the tape simultaneously secures said diaper inside edge faces together and said garment to the diaper.

3,880,166

VESSEL OCCLUDER

Thomas J. Fogarty, 770 Welch Rd., Palo Alto, Calif. 94304

Filed Aug. 20, 1973, Ser. No. 389,922
Int. Cl. A61b *17/12*
U.S. Cl. 128—325 **11 Claims**



1. A vessel occluder, comprising:

an elongated rigid pad having top and bottom surfaces and first and second opposed ends;

a first length of resilient tape having one end thereof secured to the pad adjacent said first end and extending from the bottom surface, a resiltent member in engagement with the bottom surface of the pad and extending longitudinally thereof; and

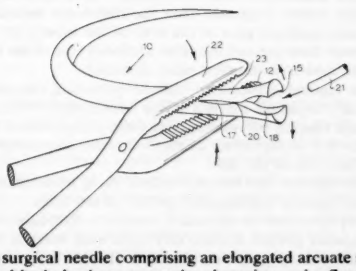
means at the second end of the pad for receiving and releasably holding said first length of the tape in a selected, adjusted position.

3,880,167

SURGICAL NEEDLE APPARATUS

Charles W. Hardwick, 600 W. 27th St., Sanford, Fla. 32771

Filed Jan. 28, 1974, Ser. No. 437,002
Int. Cl. A61b *17/06*
U.S. Cl. 128—339 **1 Claim**



1. A surgical needle comprising an elongated arcuate stainless steel body having a tapered end portion and a flat blunt end portion; said blunt end having an elongated split extending axially from the flat tip thereof, each side of said split being shaped with matching pairs of concave surfaces joined by a

convex surface therebetween and gripping jaws adjacent the tip of the blunt end and adjacent to and intersecting one pair of concave surfaces for holding suture material, said elongated split being perpendicular to the concave and convex curvature of said needle body, whereby compressing one pair of concave surfaces towards each other will compress convex surfaces together along their curvature and open said gripping jaws to engage or release suture material, and said gripping jaws having sharpened curved edges arced between edges of each said side of said blunt end split opening for biting and holding stainless steel suture material.

3,880,168

ENDOTRACHEAL TUBE

Robert A. Berman, 501 Cedar Hill Rd., Far Rockaway, N.Y. 11735

Filed Dec. 21, 1973, Ser. No. 427,036
Int. Cl. A61m *25/00*
U.S. Cl. 128—351 **1 Claim**

1. An endotracheal tube having a distal end and a near end, comprising:

a. a tapered portion, said tapered portion extending from a larger outside diameter between the distal and near ends to a smaller outer diameter at the distal end,

b. a plurality of holes formed in the wall of the endotracheal tube within said tapered portion,

c. said plurality of holes containing a total cross-sectional area which is greater than the difference between the cross-sectional area of the bore of the tube at its largest inner diameter and the cross-sectional area of the bore of the tube at its smallest inner diameter,

d. a tapered elastomeric balloon extending circumferentially about the exterior of the endotracheal tube,

e. said tapered balloon tapering from a larger outer diameter to a smaller outer diameter in a direction toward said distal end of the tube,

f. the taper of said tapered balloon being a continuation of the taper of said tapered portion of the tube,

g. the thickness of the wall of said tube decreases on said tapered portion toward said distal end, thereby making said tubing progressively more flexible in a direction toward said distal end,

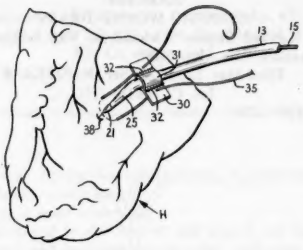
h. said tapered resilient balloon engaging against and splinting a patient's vocal cords to prevent movement of said vocal cords relative to said tapered resilient balloon.

3,880,169

CONTROLLED ENTRY PACEMAKER ELECTRODE FOR MYOCARDIAL IMPLANTATION

Albert Starr, Portland, Oreg., and David L. Swendson, Garden Grove, Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Jan. 2, 1974, Ser. No. 429,974
Int. Cl. A61n *1/04*
U.S. Cl. 128—418 **6 Claims**



1. A controlled entry pacemaker electrode for myocardial implantation comprising a bent, rigid electrode having a pointed distal end portion disposed at a small angle to the axis of its proximal end portion so that said pointed end portion may be caused to penetrate the myocardium at an oblique angle which will effect penetration to a selected depth, an insulating sleeve on said electrode leaving the point thereof exposed, a flexible lead connected axially to said proximal end portion of said electrode, a flexible insulating tube on said lead, and a transverse sewing pad fixedly secured to said sleeve and tube in a plane perpendicular to the plane of the angle in said bend and having wings extending laterally on opposite sides of said lead and electrode with the distal edge of said pad spaced in a proximal direction from the bend in the electrode so that said pad may lie against the surface of the heart and receive a suture in the herat extending through said wings and transversely overlying said flexible lead as a fulcrum to hold said pointed end of said electrode penetrated in the myocardim at said oblique angle projecting in a distal direction from said pad.

3,880,170

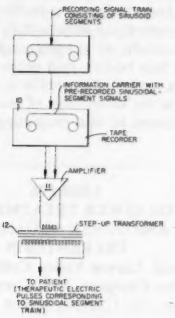
METHOD FOR MEDICAL TREATMENT OF JOINTS, MUSCLES, THE NERVOUS SYSTEM AND OTHERS

Karamfil Vladimirov Popov, Sofia, Bulgaria, assignor to Treta Gradska Bolnitza, Sofia, Bulgaria

Filed Sept. 5, 1972, Ser. No. 286,408
Claims priority, application Bulgaria, Sept. 22, 1971, 18620
Int. Cl. A61n *1/36*
U.S. Cl. 128—421 **1 Claim**

1. A method of treating a patient suffering from a joint, muscular or nervous-system disorder comprising the steps of recording a signal train consisting of segments of a single given sinusoid having a predetermined period on an information carrier, said segments having a given constant duration less

than said period and a given constant repetition time which is not divisible by said period; reproducing the recorded signal;


RECORDING SIGNAL TRAIN CONSISTING OF SINUSOID SEGMENTS
INFORMATION CARRIER WITH PRE-RECORDED SINUSOIDAL-SEGMENT SIGNALS
TAPE RECORDER
AMPLIFIER
STEP-UP TRANSFORMER
TO PATIENT (THERAPEUTIC ELECTRIC PULSES CORRESPONDING TO SINUSOIDAL SEGMENT TRAIN)

producing electrical pulses corresponding to the reproduced signal; and applying the electrical pulses to the patient.

3,880,171

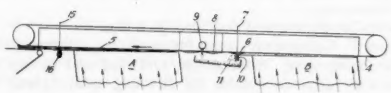
PRODUCTION OF SMOKING ARTICLES

Donald B. Naylor, Southampton, England, assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Dec. 4, 1972, Ser. No. 311,649

Int. Cl. A24c *05/18*

U.S. Cl. 131—84 C **7 Claims**



1. In a cigarette making machine for producing a cigarette consisting partially of a first smoking tobacco material and partially of a second smoking tobacco material differing in composition from said first material, the improvement comprising:

a. means for conveying tobacco, said means defining a tobacco receiving surface,

b. means for supplying a first tobacco to said tobacco receiving surface for forming a generally uniform layer thereon.

c. at least one trimming knife for trimming said tobacco to a generally double wedge configuration, having a central apex and generally feathering out in opposite directions therefrom, said knife operatively associated with said surface and being rotatable about an axis generally normal to the plane of said surface, said knife being comprised of cutting edge portions disposed in arcuate segments about said axis in alternately declining and inclining relation relative to the plane of said tobacco receiving surface,

d. means for removing tobacco from between said double wedge configurations to provide separated portions therebetween,

e. means for supplying a second tobacco to said layer for replacing at least in part, the trimmed away tobacco.

3,880,172

SMOKING MIXTURES

Robert Craig Anderson, and John Cormack Lovie, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 13, 1973, Ser. No. 332,112

Claims priority, application United Kingdom, Mar. 16, 1972, 12357/72

Int. Cl. A24b *15/00, 15/08*

U.S. Cl. 131—143 **7 Claims**

1. A smoking mixture comprising a mixture of a tobacco substitute with from 1 to 11 percent of its weight of extracted material obtained by treating Nicotiana Rustica with a nicotine-dissolving solvent and removing the solvent so that the extracted material is wholly free from any toxic solvent that may be used for said extraction, said mixture being blended with from 65 to 90 percent of its weight of tobacco and said tobacco substitute comprising a thermally degraded carbohydrate prepared by subjecting carbohydrate to a catalyzed degradation at about 100°C until the weight of degraded carbohydrate is less than 90 percent of the weight of the orignal carbohydrate.

3,880,173

FILTER MATERIAL FOR SMOKING ARTICLE

Michael Hill, Seaburn, England, assignor to British Ropes Ltd., Doncaster, England

Filed Apr. 19, 1973, Ser. No. 352,674

Claims priority, application United Kingdom, Apr. 20, 1972, 18457/72

Int. Cl. A24b *15/02*

U.S. Cl. 131—269 **10 Claims**

1. A filter material for a smoking article comprising fibrillated material in the form of filamentary material produced by splitting into a plurality of interconnected strands a polyolefin film which has been oriented in a longitudinal direction, said fibrillated material having main generally longitudinally-extending strands, interconnecting strands interconnecting the main strands, and a substantial number of free ends formed by severing main strands and/or strands which would otherwise have constituted interconnecting strands, the strands having a thickness in the range of 5 μ to 25 μ and at least 40 percent of the strands having a width not greater than their thickness, the said material being shaped to conform to the smoke passageway of said article.

3,880,174
PERMANENT HAIR SHAPING COMPOSITION AND METHOD FOR USING THE SAME

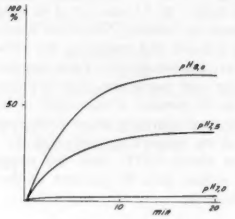
Theodor Wajaroff, Darmstadt, Germany, assignor to Wella Aktiengesellschaft, Darmstadt, Germany

Filed Dec. 26, 1973, Ser. No. 428,406

Claims priority, application Germany, Dec. 23, 1972, 2263203

Int. Cl. A45d *7/00*

U.S. Cl. 132—7 **16 Claims**



1. Process for permanently shaping human hair comprising in a first step applying to the hair a neutral or alkaline shaping composition containing a mercaptocarboxylic acid salt, permitting said shaping composition to act on the hair, thereafter in a second step applying a further quantity of the composition used in step 1 to which there has now been added a hydrophilic mercaptocarboxylic acid ester, permitting said composition to act on the hair, washing said compositions off from the hair and then applying to the hair a setting composition for permanently setting the hair.

3,880,175
FALSE EYELASH STRUCTURE

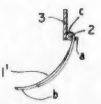
Hiroshi Hosokawa, Osaka, Japan, assignor to New Charm Co., Ltd., Osaka, Japan

Filed July 9, 1973, Ser. No. 377,793

Claims priority, application Japan, July 27, 1972, 47-88402

Int. Cl. A41g *3/00*

U.S. Cl. 132—53 **3 Claims**



1. A false eyelash structure, consisting of: an elongated, flexible supporting yarn adapted substantially to conform to the horizontal curvature of a human eyelid above the natural eyelash of said human; a plurality of hair bodies fixedly attached at corresponding ends thereof to said yarn and projecting downwardly and forwardly away from said yarn at substantially right angles thereto and simulating the appearance of a human eyelash; an elongated, flexible, transparent or colored, synthetic resin film having a wall thickness in the range of from about 0.005 mm to about 0.1 mm and adapted substantially to conform to the horizontal and vertical curvature of a human eyelid above the natural eyelash of said human, said film having inner and outer surfaces, the lower edge portion of the inner surface of said film being attached directly to said yarn and said hair bodies at the junctures of said yarn and said hair bodies with said film extending lengthwise of and generally parallel to said yarn for the entire length of said yarn, the remainder of said film extending upwardly away from said yarn and said hair bodies and providing an upper mounting portion above said yarn, the dimension of said upper mounting portion in a direction perpendicular to said yarn being sufficient that said mounting portion can be bent over the upper side of said yarn into contact with a human eyelid and to conform to the curvature of the eyelid over a substantial surface area, an exposed adhesive layer on the inner surface of said mounting portion so that said mounting portion can be adhesively attached directly to an eyelid of a human above said yarn, said lower edge of said film and the lowermost portion of said yarn lying substantially in a common plane extending substantially at a right angle to said projecting portions of said hair bodies, said projecting portions of said hair bodies being entirely disposed in a vertically downwardly spaced relation to the lower edge of said film, said film being free from attachment to said projecting portions of the hair bodies.

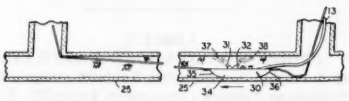
3,880,176
APPARATUS FOR SEWER TREATMENT TO KILL TREE ROOTS AND OTHER ORGANIC GROWTH THEREWITHIN

Frederick F. Horne, Carmel Valley, Calif., assignor to Airrigation Engineering Company, Inc., Carmel Valley, Calif.

Division of Ser. No. 122,738, March 10, 1971, Pat. No. 3,741,807, which is a continuation-in-part of Ser. No. 850,321, Aug. 6, 1969, abandoned, which is a continuation-in-part of Ser. No. 760,822, Sept. 19, 1968, abandoned. This application Apr. 30, 1973, Ser. No. 355,808

Int. Cl. B08b *3/02, 9/02*

U.S. Cl. 134—167 C **9 Claims**



1. Apparatus for treating root-infested sewer pipes including in combination

a sled having a bottom skid for engaging the lower portion only of a pipe and a low center of gravity and open at its upper end,

means for pulling said sled through a pipe,

upwardly facing spray means for producing a diffuse, foam-inducing spray, mounted on said sled and having upwardly directed nozzles for directing spray against the upper walls only of said pipe, and

means for supplying a liquid aqueous mixture of phytocidal fumigant and surfactant under pressure to said spray means so that a phytocidal foam can be applied to the upper portions especially of said pipe.

3,880,177
METHOD FOR TRANSPORTING WAXY HYDROCARBON MIXTURES

Keith M. Kersch, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed June 17, 1974, Ser. No. 479,949

Int. Cl. F17d *1/16*

U.S. Cl. 137—13 **20 Claims**

1. An improved process of transporting a "waxy" hydrocarbon mixture comprising fractionating the mixture into at least a high pour point fraction and a low pour point fraction, congealing at least a portion of the high pour point fraction by dispersing it as molten wax particles into the bottom of a column having a hot dense liquid in the bottom thereof and a colder, less dense liquid in the top thereof, permitting the wax particles to move to the top of the column, the colder, less dense liquid being at a sufficiently low temperature to substantially solidify the wax particles by the time they reach the top of the column, separating the solidified wax particles and slurrying at least a portion of the solidified particles in a liquid hydrocarbon comprised of at least a portion of the low pour point fraction and thereafter transporting the slurry.

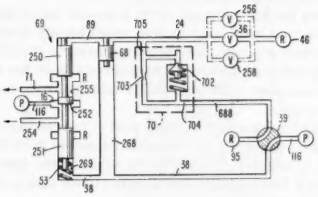
3,880,178
HYDRAULIC LOGIC CIRCUIT WITH CONTROLLED DELAY

Hugo A. Panissidi, Peekskill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 85,852, Nov. 2, 1972, abandoned, Continuation-in-part of Ser. No. 824,424, May 14, 1969, Pat. No. 3,726,190. This application Oct. 4, 1972, Ser. No. 296,498

Int. Cl. F16k 31/43

U.S. Cl. 137—14 18 Claims



1. A hydraulic system including a hydraulic element having at least one hydraulic input circuit including a first input terminal and a hydraulic output circuit, said output circuit having at least two states of operation, said input circuit tending to drive said element towards one of said states of operation during maintenance of relatively high pressure at said first input terminal,

a source of hydraulic pressure,

a controlling inlet connected through a first port and a first conduit to said first input terminal,

a control valve connected between said source and said controlling inlet

time delay means connected to admit fluid tending to provide pressure at said first input terminal for delaying a rapid increase of pressure at said first input terminal until at least a predetermined minimum time delay after application of pressure at said first input terminal and for delaying driving of said element, said time delay means including storage means for providing a substantial volume for storage of hydraulic fluid substantially without resistance to fluid flow until a fixed volume of fluid has been stored within said storage means thereby filling it,

a second port being connected between said first input terminal and a valving means connected to a low pressure outlet, said valving means being adapted for opening selectively to defer said rapid increase of pressure at said first input terminal beyond said time delay, and said system including conduit means for causing fluid flowing from said control valve and said controlling inlet to flow into said storage means and fill it thereby measuring said time delay during both open and closed positions of said valving means, whereby the valving means measures the time delay even when said valving means is open.

3,880,179
METHOD FOR THE EFFECTIVE DISPENSATION OF OXIDATION-AND/OR MOISTURE-SENSITIVE MATERIALS

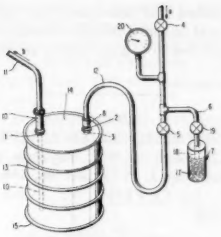
Arnold Lenz, Gerstenkamp, and Walter Rogler, Bonn, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Continuation-in-part of Ser. No. 173,599, Aug. 20, 1971, abandoned, which is a continuation-in-part of Ser. No. 786,060, Dec. 23, 1968, abandoned. This application Nov. 14, 1973, Ser. No. 415,796

Claims priority, application Germany, Dec. 23, 1967, 1667010

Int. Cl. F04f 1/14

U.S. Cl. 137—14 8 Claims



1. A method for conveying an oxidation-sensitive and/or moisture-sensitive free-flowing powder material from an air-tight storage tank means to another vessel without exposing said material to the stmosphere, which comprises successively introducing an inert gas into a first conduit means to purge the surrounding atmosphere from said conduit means, attaching said first conduit means to a closure means of the storage tank, attachment of said first conduit means placing said conduit means in communication with the material in said tank; introducing said inert gas into said storage tank to place the material under a slight excess pressure; limiting the pressure in said storage tank by venting some gas to atmosphere; detachably connecting a second conduit means to said storage tank while said inert gas is being introduced through said first conduit means, placing second conduit means in communication with the other vessel; and introducing the inert gas through first conduit means into said storage tank at a higher pressure sufficient to force the sensitive powder material in the storage. tank through the second conduit means together with said inert gas into said other vessel.

3,880,180
WATERPIPE FREEZE DETECTOR

Otto H. Wismer, El Mirage Star Rt., Box 134, Adelanto, Calif. 92301

Filed Jan. 21, 1974, Ser. No. 435,261

Int. Cl. E03b 7/12

U.S. Cl. 137—60 6 Claims

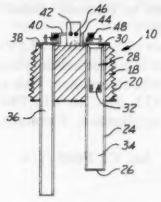
1. A water-freeze detector comprising:

a body;

a vessel mounted on said body, said vessel having a closed bottom and an open top for connection to a water supply line for filling with water from the water supply line;

a piston movably mounted with respect to said vessel adjacent the open top of said vessel and spaced from the closed bottom of said vessel to define a freeze volume, said piston having port means therein to vent said freeze volume out of the top of said vessel so that water from the water supply line fills said freeze volume and exposure of said vessel to freezing ambient causes the freezing of water within said vessel to raise said piston with respect to said vessel;

a bleed passage through said body, a valve in said bleed passage to control the flow of water from the water supply line through said body and a snap action device interconnected between said piston and said valve so that upon raising of said piston within said vessel due to freezing of water in said freeze volume causes snapping open of said valve.

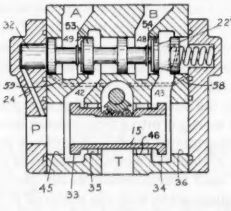


3,880,181

HYDRAULIC CONTROL SYSTEM

Finn Feroy, 3214 Ninth St., N.E., Puyallup, Wash. 98371

Filed May 3, 1973, Ser. No. 356,891
Int. Cl. F15b *13/42, 15/00*
U.S. Cl. 137—106 **7 Claims**



1. An improvement in a fluid control system comprising:

a housing having a first bore, a control spool slidable in said first bore, said control spool having lands and intermediate grooves, said housing having a plurality of first passages intersecting said first bore for selective cooperation with said lands and grooves of said control spool, said control spool being movable between hoisting, neutral and lowering positions,

said housing having inlet and outlet fluid ports, said control spool so constructed and arranged as to alternately connect two of said first passages to respective ones of said inlet and outlet ports upon movement of said control spool to hoisting and lowering positions said housing having a second bore, a second spool slidable in said second bore, said second spool having lands and intermediate grooves, said housing having a plurality of second passages intersecting said second bore for selective cooperation with said lands and grooves on said second spool, said housing having a first cylinder port connected to one of said second passages and a second cylinder port connected to another of said second passages, two of said first passages being respectively connected to two of said second passages,

a spring normally maintaining said second spool toward one end of said second bore whereby lands of said second spool block the fluid flow in said second passages thereby blocking flow from said cylinder ports,

pressure responsive means adapted to provide movement of said second spool against said spring whereby said second passages are opened so that fluid can flow into and out from respective cylinder ports, said pressure responsive means comprising a fluid passage from said inlet port to an end of said second bore to transmit fluid pressure thereto upon movement of said control spool to hoisting and lowering positions, and

valve means in at least one of said lands on said second spool for allowing flow from one of said first passages to one of said second passages and for blocking flow from said one of said second passages to said one of said first passages when said spring is normally maintaining said second spool toward said one end of said second bore.

6. An improvement in a fluid control system comprising:

a housing having a first bore, a control spool slidable in said first bore, said control spool having lands and intermediate grooves, said housing having a plurality of first passages intersecting said first bore for selective cooperation with said lands and grooves of said control spool, said control spool being movable between hoisting, neutral, and lowering positions,

said housing having inlet and outlet fluid ports, said control spool so constructed and arranged as to alternately connect two of said first passages to respective ones of said inlet and outlet ports upon movement of said control spool to hoisting and lowering positions,

said housing having a second bore, a second spool slidable in said second bore, said second spool having lands and intermediate grooves, said housing having a plurality of second passages intersecting said second bore for selective cooperation with said lands and grooves on said second spool,

said housing having a first cylinder port connected to one of said second passages, and a second cylinder port in said housing connected to another of said second passages, two of said first passages being respectively connected to two of said second passages,

a spring normally maintaining said second spool in a first position adjacent to one end of said second bore, the lands of said second spool cooperating with said second bore and said second passages when said second spool is in said first position so as to block the fluid floow in one of said second passages to thereby block the fluid flow from one of said cylinder ports and so as to open one of said second passages to fluid flow to thereby place the other of said cylinder ports in open fluid connection with one of said first passages,

said housing having a third bore placed substantially coaxially with said second bore, a piston in said third bore, said piston in abutting engagement with said second opposite said spring,

pressure responsive means for moving said second spool against said spring and away from said one end of said second bore to a second position wherein said second passages are opened so that fluid can flow into and out from the cylinder ports, said pressure responsive means comprising a fluid passage from said inlet port to an end of said third bore to transmit fluid pressure to said end of said third bore upon movement of said control spool to hoisting and lowering positions thereby causing said piston to move toward said second spool and causing said second spool to move to said second position, said second spool being operable to move only between said first and second positions.

3,880,182

UNIVERSAL VALVE SYSTEM FOR BEER KEGS AND THE LIKE

Mack S. Johnston, 1065 Lomita Blvd. No. 220, Harbor City, Calif. 92626

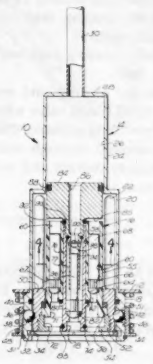
Continuation-in-part of Ser. No. 389,836, Aug. 20, 1973, abandoned. This application July 10, 1974, Ser. No. 487,358
Int. Cl. B65d *83/14;* **F16l** *55/10*
U.S. Cl. 137—212 **22 Claims**

1. In a keg or the like having side and end walls and an opening in one of said walls, a valve system mounted on said opening and comprising:

a generally cylindrical housing having one end thereof supported at said opening and the other end extending into the interior of the keg;

a sealing member adjacent said one end of the housing;

a valve assembly including a valve body having a support member adjacent the outer end thereof, positioned in said housing for longitudinal movement between a closed position in which said support member is in sealing engagement with the sealing member and an open position in which the support member is spaced from the sealing member;



a liquid passageway and a gas passageway in the valve body for communication between the interior and the exterior of the keg when the valve body is in the closed position, each of which passageways contains valve means;

a plurality of openings in the housing within the interior of the keg, which openings are unobstructed to provide for the flow of liquid through the keg opening and the housing openings and into the interior of the keg when the valve body is in the open position; and

locking detent means for releasably securing the valve assembly in the closed position and movable to an open position.

3,880,183

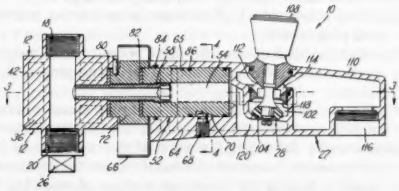
MIXING AND RESERVING VALVE ASSEMBLY

Jurgen Bruno Humpert, and Karl-Heinz Nolting, both of Hemer, Germany, assignors to Friedrich Grohe Aramturenfabrik, Hemer, Germany

Filed May 16, 1974, Ser. No. 470,406

Int. Cl. F16k *1/02*

U.S. Cl. 137—359 **6 Claims**



1. A mixing and reversing valve assembly for use in bath and shower combinations, or similar arrangements, comprising:

a concealed water connection fitting adapted to be mounted behind a wall surface including a pair of separate chambers, inlet ports communicating with said chambers adapted to be connected to hot and cold water supplies, respectively, and an outlet port for mixed return water;

a wall of said fitting having a pair of outlet openings each communicating with one of said chambers and a third opening communicating with said outlet port;

a cylindrical surface mountable plug member adjacent to said wall having three passages therethrough, one end of two of said passages being aligned with said pair of outlet openings, respectively, and one end of said third passage being aligned with said third opening;

means attaching said plug member to said wall;

a flow fitting having an outlet and a sleeve portion having a cylindrical bore therein slidably receiving said plug member;

flow reversing valve means in said flow fitting movable between first and second positions;

means in said flow fitting providing flow communication from the other ends of said passages in said plug member to said flow reversing valve means;

in said first position, said flow reversing valve means allowing water to flow from said chambers in said water connection fitting through said two passages to said flow fitting outlet; and

in said second position, said flow reversing valve means allowing water from said two passages to flow reversely back through said third passage to said outlet port of said water connection fitting.

3,880,184

CONTROL VALVES FOR FLUIDS

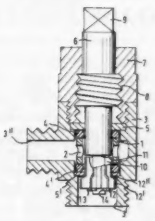
John Maxwell Sheardown, 62, High St., Old Harlow, Essex, England

Filed Dec. 20, 1973, Ser. No. 426,696

Claims priority, application United Kingdom, Dec. 20, 1972, 58767/72

Int. Cl. F16k *25/00*

U.S. Cl. 137—454.2 **4 Claims**



1. A valve for controlling the flow of at least one supply of a fluid, said valve comprising:

a valve body;

an assembly of at least one apertured sleeve member mounted in said valve body with the interposition of annular sealing members and washers;

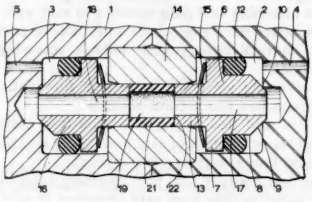
a plunger mounted in said body for axial movement relative to said body and said sleeve member; and

a fluted bush member secured on the inner end of said plunger and having axially extending lands or ribs spaced apart circumferentially and defining a plurality of flutes, each land or rib having an axial portion cooperating with a sealing member or washer for centering said plunger relative to said assembly, and at least some of said lands or ribs being extended radially at one end to form a substantially radial shoulder engageable with an innermost sealing member or washer of said assembly for facilitating co-axial extraction of said assembly as a unit out of the valve body or housing.

3,880,185
CONTROL FOR HYDRAULIC SYSTEMS

Anthony William Harrison, Birmingham, England, assignor to Girling Limited, Birmingham, England

Filed Aug. 3, 1973, Ser. No. 385,234
Claims priority, application United Kingdom, Aug. 22, 1972, 38974/72
Int. Cl. F16k *17/04*
U.S. Cl. 137—493.9 **6 Claims**

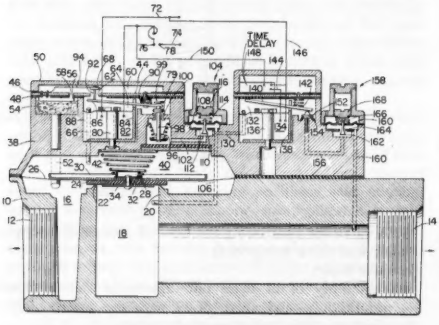


1. A control for connection between two related hydraulic systems comprising a housing incorporating spaced chambers having ports each adapted to be connected to one of the systems, an axial bore in the housing extending between the chambers and a resiliently loaded sealed valve member axially slidable in each chamber, an axial passage through each valve member in alignment with the axial bore in the housing, and resilient means urging the outer end of the member into engagement with a seating at the outer end of the chamber to close the passage through the valve member when there is no pressure in the system to which that chamber is connected.

3,880,186
FLOW CONTROL DEVICES

Jess H. Turner, Riverside; Elmer E. Wallace, Fullerton, and Claud C. Hurd, Riverside, all of Calif., assignors to Essex International Inc., Fort Wayne, Ind.

Filed Mar. 25, 1974, Ser. No. 454,131
Int. Cl. F16k *17/10, 31/145*
U.S. Cl. 137—495 **16 Claims**

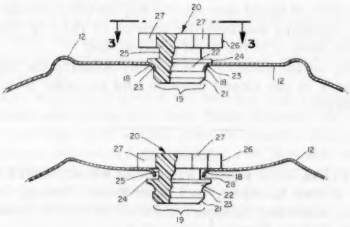


1. A control device for controlling the flow of fuel to a gas burner, comprising:
- a casing having inlet and outlet means;
- main valve means for controlling the flow of fuel between said inlet and outlet means;
- a diaphragm operably connected to said main valve means, said diaphragm defining an operating pressure chamber between a wall on said casing and said diaphragm, and being responsive to a pressure differential on both sides thereof to operate said main valve means;
- a first bleed flow path connecting said inlet means with said outlet means;
- a second bleed flow path connecting said first bleed flow path with said operating chamber;
- an orifice bleed valve disposed in said first bleed flow path upstream from said second bleed flow path;
- said orifice bleed valve comprising a valve member disposed for open and closed relationship with a corresponding valve seat, said valve member having a restricted orifice extending therethrough, said restricted orifice being disposed for registry with an opening through said valve seat so that the flow of bleed gas is restricted when said valve member is closed; and unrestricted when said valve member is open;
- an on-off bleed valve disposed in said first bleed flow path downstream from said second bleed flow path;
- means for normally biasing said on-off bleed valve to a normally closed position;
- means for normally biasing said orifice bleed valve to an open position; and
- automatic means for closing said orifice bleed valve and opening said on-off bleed valve whereby bleed gas is bled off from said operating pressure chamber at a rate higher than can be supplied through said restricted orifice to reduce the pressure therein and move said diaphragm to operate said main valve means.

3,880,187
PLUG RELIEF VALVE FOR PRESSURE CONTAINERS

Raymond H. P. Kneusel, Flourtown, Pa., assignor to Crown Cork & Seal Company, Inc., Philadelphia, Pa.

Filed May 17, 1971, Ser. No. 143,893
Int. Cl. F16k *15/14*
U.S. Cl. 137—525 **8 Claims**



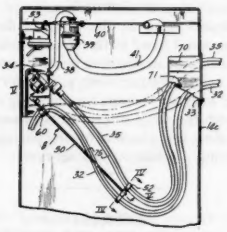
1. A method of releasing abnormally high pressure levels from within a container in which a plug means is utilized within a container opening comprising the steps of:
- applying abnormally high pressure to an interior portion of said plug means;
- transmitting said abnormally high pressure to a resistance portion of said plug means sealingly engaging said container;
- driving the resistance portion of said plug means outwardly of said container causing resistance to be overcome;
- permanently deforming a portion of the container by internal pressure transmitted directly from the contents to assist in driving the resistance portion of said plug from its initial position;
- retaining the interior portion of said plug within said container; and
- preventing the uncontrolled escape of said container contents by means of the retention of said interior portion within said container.

3,880,188

HOSE RETRACTOR FOR AN APPLIANCE

Roy C. Oakley, Jr., Coloma, Mich., and James I. Czech, Lexington, Mass., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Nov. 15, 1973, Ser. No. 415,959
Int. Cl. B65h 75/36
U.S. Cl. 137—577 21 Claims



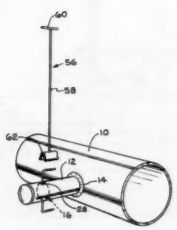
1. An apparatus for retracting a hose within an appliance cabinet having a flat wall portion on at least one side, said apparatus comprising a rod, mounting means for pivotally mounting one end of the rod adjacent said one side of the cabinet for pivoting movement in a plane substantially parallel to said wall portion, a hose retainer having engagement means for slidably engaging the hose, said hose retainer being pivotally attached to the other end of said rod with the engagement means being in a plane substantially perpendicular to the plane of said one side of the cabinet.

3,880,189

IRRIGATING APPARATUS

Harold C. Bennett, P.O. Box 416, Stratford, Tex. 79084

Filed Aug. 23, 1973, Ser. No. 390,934
Int. Cl. F17d 1/08
U.S. Cl. 137—608 2 Claims



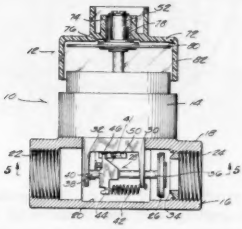
1. Irrigating apparatus comprising a manifold, a plurality of outlet pipes spaced along said manifold, communicating therewith, and extending outwardly therefrom for discharging water from said manifold, a valve for each of said outlet pipes having a flat valve body within the corresponding outlet pipe and having shaft-receiving means receiving shaft means extending generally vertically through the outlet pipe in both upper and lower directions, said valve body being pivotable between an open position and a shut position, said shaft means comprising a first shaft having a first portion extending part way through said shaft-receiving means of said valve body, said first shaft also extending outwardly through a wall of the pipe and having a second, transversely-extending portion outside said pipe, bent away from said first portion and extending in one direction therefrom, a second shaft having a first portion extending part way through said shaft-receiving means of said valve body, said second shaft also extending outwardly through the wall of said pipe diametrically opposite said first shaft, said second shaft having a second, transversely-extending portion outside said pipe, bent away from the first portion of said second shaft and extending in one direction therefrom, said second portions of said first and said second shafts extending in a common direction and being parallel to one another and to said flat valve body, inner ends of said first portions of said first shaft and said second shaft having interengaging means cooperating with one another to prevent one shaft from turning relative to the other shaft but not to prevent movement of said shafts in opposite directions away from one another, and means for affixing said first and second shafts to said valve body.

3,880,190

TIMED FLUID VALVE

Gary R. Boss, New Berlin, Wis., assignor to Erie Manufacturing Company, Milwaukee, Wis.

Filed May 31, 1973, Ser. No. 365,561
Int. Cl. F16k 21/06, 31/48
U.S. Cl. 137—624.12 8 Claims



1. A timed fluid valve comprising:
a body having an inlet and an outlet;
a valve means controlling flow between the inlet and outlet;
a timer means mounted on said body and having a timer shaft associated therewith;
a valve actuating means operatively connected to said valve means and operatively connected to said timer means, said valve actuating means operative to open said valve means only after said timer means has been actuated to a predetermined minimum time setting and further operative to retain said valve means in fully open position for said minimum time period, said valve actuating means further operative to provide a minimum degree of valve opening movement to the valve means before it is effective to retain the valve means in its open position, said minimum degree being the fully open position said valve actuating means being further operative to fully close said valve means instantaneously after said predetermined minimum time period has elapsed; and
an acutating means connected to said timer shaft through a one-way clutch means whereby the timer means can be actuated by the actuating means only in the direction for setting the timer and opening said valve means.

3,880,191

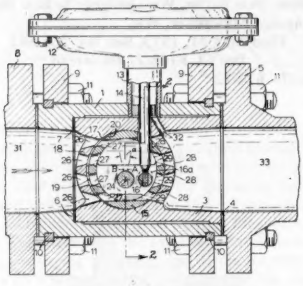
ROTARY MULTIPORT THROTTLING VALVE

Hans D. Baumann, 29 Villa Dr., Foxboro, Mass. 02035

Filed Mar. 21, 1974, Ser. No. 453,650
Int. Cl. F16k 47/02
U.S. Cl. 137—625.32 7 Claims

1. Rotary multiport throttling valve comprising:
a. a tubular housing;
b. an inlet and outlet end formed in said housing, said inlet and outlet ends adapted to be coupled to a pipe line;
c. a straight-cylindrical passage formed in said housing and extending from the outlet end of said housing towards a stop shoulder near the inlet of said housing;

d. a cylindrical insert assembly removably placed within the straight-cylindrical passage abutting the stop shoulder within said housing;
e. a cylindrical bore extending perpendicular through the whole width of an outer cage, forming the shell of said insert assembly;
f. an inner rotating cage, having a partial or complete cylindrical wall located within and cooperating with the perpendicular cylindrical bore of said outer cage;
g. a pair of shaft bearings located and retained within said perpendicular bore and abutting said rotating inner cage on either end;
h. a shaft extending throughout and between both shaft bearings and providing support for said rotating inner cage;



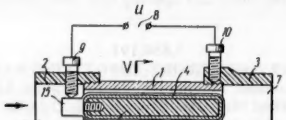
i. a set of symmetrically spaced flow passages, located within the abutting front end of said outer cage and providing communicating openings between the inlet end of said housing and the said perpendicular bore;
k. a set of symmetrically spaced flow passages penetrating through a portion of the cylindrical wall of said rotating inner cage, and wherein said flow passages line up with those contained within said outer cage at a certain rotary inner cage position labeled as "the fully open valve position," and wherein the radial distance between each set of flow passages is at least equal to the radial width of each flow passage;
l. means to actuate and to rotatively position said rotating inner cage suitably connected to said housing.

3,880,192

VARYING THE HYDRAULIC RESISTANCE IN A PRESSURE PIPE

Anatoly Alexeevich Denizov, ul. Rubinshteina, 36, kv. 49, and Vladimir Stepanovich Nagorny, ul. Novo-Litovskaya 5, kv. 24, both of Leningrad, U.S.S.R.

Filed July 17, 1972, Ser. No. 272,665
Int. Cl. F15c *1/04*
U.S. Cl. 137—827 **2 Claims**



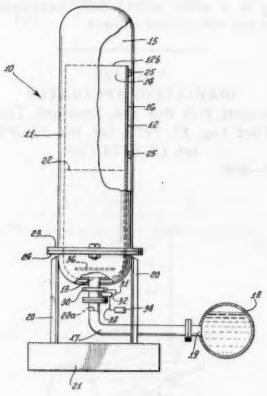
2. An electro-hydraulic converter for varying the character of a flow of liquid under the influence of an input electric signal, comprising a housing with inlet and outlet connection pipes interconnected by a channel for the passage of said liquid; means for varying the hydraulic resistance comprising a direct-current source and electrodes connected to respective terminals of said direct-current source; means for electrically charging the liquid and located inside said housing, said housing serving as the external electrode of said converter; an inner electrode located inside said housing; a dielectric rod securely fixed inside said housing and provided with diametrally located rectangular slots extending along the axial length thereof, said inner electrode being a metal band placed at the base of said slots of said dielectric rod, said means for charging the liquid being in the form of dielectric threads placed over the metal band in the slots of said dielectric rod; a metal rod inserted in an opening made in one of the ends of said dielectric rod in contact with said inner electrode, said inner electrode with said means for charging the liquid defining, together with the walls of said slots of said dielectric rod and of said housing, said channel for the passage of said liquid, said channel being a pressure pipe section.

3,880,193

SURGE ABSORBER FOR CRYOGENIC FLUIDS

George E. Lewis, Arcadia, Calif., assignor to Hydril Company, Los Angeles, Calif.

Filed Feb. 7, 1974, Ser. No. 440,513
Int. Cl. F16l *55/04*
U.S. Cl. 138—26 **8 Claims**



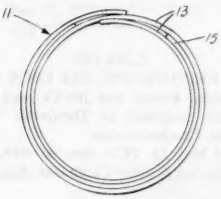
1. In a surge absorber for cryogenic fluids,
a. a first container for containing pressurized gas, and
b. a second container to receive surging cryogenic liquid via an inlet to the second container, said inlet located near the bottom of the second container and there being a cryogenic liquid inlet pipe passing through the wall of the first container near the bottom thereof to terminate proximate said inlet, the upper interior of the second container being in open communication with the interior of the first container so that gas in the first container is increasingly pressurized as cryogenic liquid is received into the second container, the second container extending into the first container, the two containers having annular upstanding walls which are substantially everywhere closely spaced apart.

3,880,194

ELECTRICAL INSULATORS

Walter P. McNeal, Holland, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Filed Feb. 20, 1973, Ser. No. 333,786
Int. Cl. F16l 11/12; H01b 7/00
U.S. Cl. 138—128 6 Claims



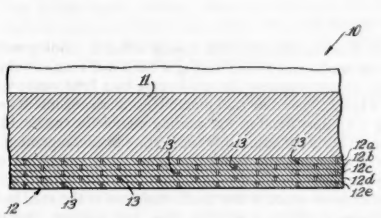
1. A generally tubular multi-layer electrical insulator for accommodating electrically connected portions of at least two electrical conductors comprising a dielectric sleeve having first and second wall areas which are at least three layers thick, said first and second wall areas being separated by two other wall areas which are at least two layers thick and at least one less layer thick than the number of layers in the first and second wall areas, whereby a dielectric insulator is formed having a minimum of three layers of thickness along the second wall area and establishing a major portion of the circumferential extent of the insulator to better resist puncture by connected portions of electrical conductors, said sleeve having a longitudinally extending ultrasonically welded continuous seam along the first wall area.

3,880,195

COMPOSITE PIPELINE PRESTRESSED CONSTRUCTION

Baxter D. Goodrich, Houston, Tex., and Thomas J. Atterbury, London, Ohio, assignors to Texas Eastern Transmission Corporation, Shreveport, La.

Filed Mar. 13, 1973, Ser. No. 340,815
Int. Cl. F16l 9/04; B23p 11/02
U.S. Cl. 138—172 12 Claims



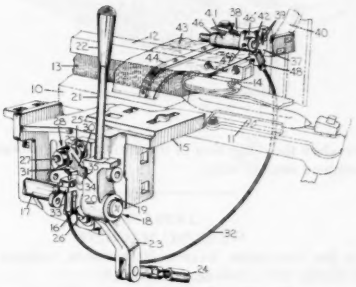
1. A composite construction for use in a high pressure pipeline, comprising at least one tubular pipe portion adapted to contain and transmit fluid under pressure, and at least one layer of high tensile strength strap wrapped around the outer surface of said pipe portion and longitudinally unrestrained relative thereto whereby said strap does not longitudinally reinforce said pipe portion, said pipe portion and said strap both being of elastically deformable material and having substantially the same modulus of elasticity, said strap having a yield strength greater than the yield strength of said pipe portion and being operable to carry a substantial portion of the pressure load in said composite construction when the latter is operating at a normal pressure, said strap being of Martensitic steel having a tensile strength of at least about 130,000 psi and said composite construction being prestressed prior to being operated at a normal pressure by increasing the internal pressure therein to a value sufficient to exceed the yield strength of said pipe portion but insufficient to exceed the yield strength of said strap.

3,880,196

SAFETY LOCK FOR LOOMS

Joseph M. Budzyna, East Douglas, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed June 3, 1974, Ser. No. 475,762
Int. Cl. D03d 49/00, 49/58, 51/00
U.S. Cl. 139—1 R 3 Claims



1. In a fly shuttle loom having a supporting frame, a lay beam, a shuttle guard with hinge members by which said guard is attachable to the frame to be swung to and from active and inactive positions, a shipper lever pivotally mounted on the frame with a motor control link operatively connected to one end thereof, a safety lock for the shipper lever which comprises:

a. a latch member pivotally carried on the frame;

b. operator means having one end thereof operatively associated with said latch member; and

c. actuating means carried by the hinge members of the shuttle guard and operatively associated with the other end of said operator means for moving said latch member to a position to prevent actuation of the shipper lever upon movement of the guard to its inactive position.

3,880,197

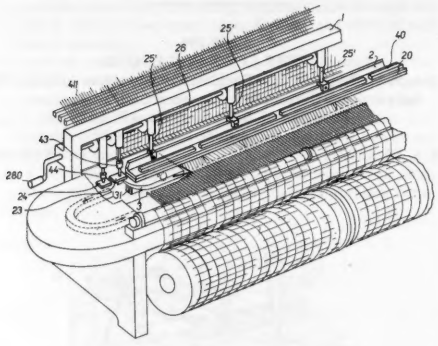
METHOD OF AND APPARATUS FOR CONTROLLING WEFT CARRIERS IN TRAVELLING-SHED WEAVING MACHINES

František Bučil; Vítězslav Vašek, and Karel Špatenka, all of Usti nad Orlici, Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed June 11, 1973, Ser. No. 368,603
Claims priority, application Czechoslovakia, June 12, 1972, 4065-72; June 12, 1972, 4066-72
Int. Cl. D03d 47/26
U.S. Cl. 139—12 21 Claims

1. A method of controlling weft carriers which move along a carrier guide in travelling shed weaving machines provided with a machine drive and a controller for said drive, comprising monitoring any increased resistance to travel of the carriers during their operative movement resulting in a deflection of the carrier guide, detecting and converting the deflection of

the carrier guide into an electrical signal, and forwarding such signal to the controller of the machine drive to stop the machine when the deflection of the carrier guide exceeds a predetermined desired value.



3,880,198

WEAVING MACHINE

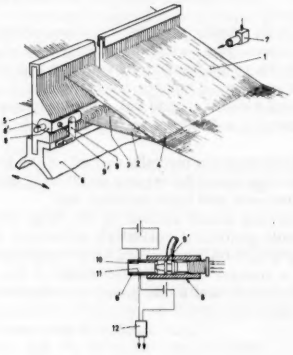
Geert Jan Vermeulen, Deurne, Netherlands, assignor to Ruti-Te Strake B.V., Deurne, Netherlands

Filed May 7, 1973, Ser. No. 357,842

Claims priority, application Netherlands, May 10, 1972, 7206367

Int. Cl. D03d *47/28, 47/34*

U.S. Cl. 139—127 P **2 Claims**



1. A weaving machine comprising two sheets of warp threads which are momentarily held in diverging planes to form a weaving shed, and a main blowing nozzle arranged in a position at one side of such shed to propel a weft thread through such shed by means of a fluid discharged from said nozzle, wherein the improvement comprises

a. a reciprocable reed comprising a plurality of blades arranged parallel to the direction of reciprocation, each blade having a notch in its beating edge, such notches being aligned and forming a tunnel having a cross-section less than 8 mm. wide which in the retracted position of the reed has one end aligned with the main blowing nozzle,

b. an air injector nozzle which is located wholly within said tunnel and has a central suction channel arranged to receive the head end of a weft thread propelled through said tunnel by the main blowing nozzle in order to maintain tension on the weft thread during the beating up movement of the reed, and

c. a bracket on which the injector nozzle is mounted, which is slidably secured to the reed and is arranged to locate the injector nozzle in the end of said tunnel remote from the main blowing nozzle in a longitudinally adjusted position to accomodate the width of cloth being woven.

3,880,199

DEVICE FOR REINFORCING THE EDGE OF A FABRIC

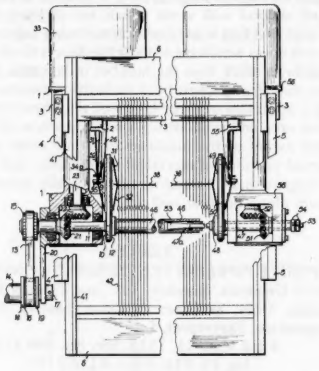
Petr Riha; Stanislav Kovar, and Jiri Cernocky, all of Vsetin, Czechoslovakia, assignors to Zbrojovka Vsetin, narodni podnik, Vsetin, Czechoslovakia

Filed May 13, 1974, Ser. No. 469,452

Claims priority, application Czechoslovakia, May 14, 1973, 3394-73

Int. Cl. D03d *11/00*

U.S. Cl. 139—54 **4 Claims**

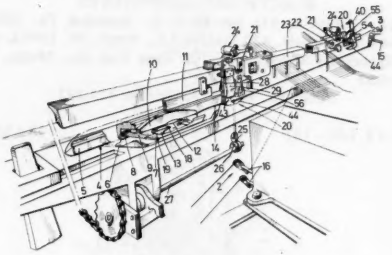


1. In a weaving machine having a frame, guiding means for heald shafts and a reed having a front and rear extreme position, an arrangement for reinforcing by a leno weave a border of a fabric woven on said machine, said arrangement comprising a support fixed to the guiding means for the heald shafts, a main body for adjustably supporting the arrangement proper for reinforcing the borders of the fabric mounted on said support, an arm fixed to said body, the arm being disposed in the internal space of the heald shafts up to the reed in its rear extreme position, a winding disk, two guidung channels for binding threads provided on this winding disk symmetrically and oppositely with respect to its axis, a bed for rotatably supporting the winding disk provided on the end of said arm, the axis of rotation of the winding disk being substantially parallel with the weft introduced into the shed, a bobbin supporting disk rotatably supported on the main body, two bobbins with a store of binding threads rotatably supported by the bobbin supporting disk, a countershaft receiving its drive from the drive of the weaving machine, the axis of the countershaft being parallel with the axis of the winding disk, means for transmitting the rotating motion from the countershaft both to the winding disk and to the bobbin supporting disk, a distributing mandrel fixed to the center of the supporting disk, an eyelet provided on the face part of the extremity of the mandrel, the face part with the eyelet of the mandrel being situated in the weaving plane of the weaving machine, the distributing mandrel being driven at a speed which is synchronous with the rotating speed with the winding disk.

3,880,200
WEFT THREAD HOLDING DEVICE IN A LOOM WITH FIXED WEFT FEEDING

Aime Fabre, Montalieu, France, assignor to "Manta", Waasmunster, Belgium

Filed Oct. 12, 1973, Ser. No. 405,981
Claims priority, application France, Oct. 12, 1972, 72.36808
Int. Cl. D03d *47/24*; **D03j** *5/06*
U.S. Cl. 139—125 **15 Claims**



1. Weft thread holding device in a loom with stationary supply of weft thread, comprising:

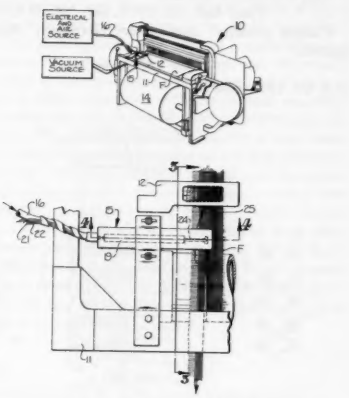
a. a moving gripper shuttle which comprises:
  a gripper having two gripping jaws for clamping the weft thread;
  and an upwardly extending detent having a recessed area for positioning the weft thread running from the gripper to the stationary supply to the weft thread;
b. means for opening the gripper to release the weft thread; and
c. a pair of stationary holding clamps, one on each side of the loom, each holding clamp comprising two clamp halves between which an end of the weft thread introduced by the detent is clamped after the detent has passed, each clamp half comprising:
  a main part;
  a clamping jaw, with an oblong shape in parallel relationship with the movement of the gripper shuttle; and
  a connecting arm, joining said main part with said clamping jaw.

3,880,201
APPARATUS AND METHOD FOR SEVERING TEXTILE FABRIC

Charles D. Lee, Jr., and James H. Henderlite, III, both of Charlotte, N.C., assignors to Parks-Cramer Company, Fitchburg, Mass.

Continuation-in-part of Ser. No. 283,165, Aug. 23, 1972, abandoned. This application Aug. 21, 1973, Ser. No. 389,034
Int. Cl. D03d *49/70*
U.S. Cl. 139—302 **4 Claims**

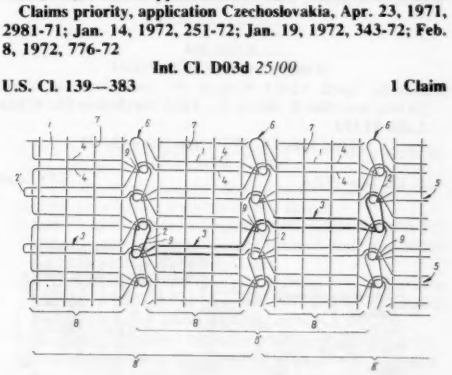
1. A method of severing a length of textile fabric comprising the steps of moving fabric along a predetermined path of travel while imposing on the fabric forces tensioning the fabric in the plane of the path and while contacting one face of the fabric to restrain the fabric against movement in one direction transversely away from the plane of the path, delivering a flowing stream of gas while heating the gas stream to an elevated temperature and while directing the heated gas stream in the one direction for impingement against the moving and tensioned fabric at a location generally opposite the restraining contact therewith, and severing the fabric with the heated gas stream.



3,880,202
KNIT-WOVEN FABRIC

Josef Mohelnicky, Prague; Josef Zmatlik, and Miloslav Jisa, both of Liberec, all of Czechoslovakia, assignors to Statni Vyzkumny Ustav Textilni, Liberec, Czechoslovakia

Continuation-in-part of Ser. No. 246,239, April 21, 1972, Pat. No. 3,746,051. This application Feb. 6, 1973, Ser. No. 330,045
Claims priority, application Czechoslovakia, Apr. 23, 1971, 2981-71; Jan. 14, 1972, 251-72; Jan. 19, 1972, 343-72; Feb. 8, 1972, 776-72
Int. Cl. D03d *25/00*
U.S. Cl. 139—383 **1 Claim**



1. A knit-woven fabric, comprising a warp-knitted structure having wales of closed reverse stitches formed from a system of weft threads, longitudinal woven stripes disposed between said wales of closed reverse stitches and being formed from warp threads interlaced with connecting loops of said closed reverse stitches each leg of said connecting loops passing from one longitudinal woven stripe to an adjacent one and participating in the wale formation by passing beneath a reverse stitch and over the associated connecting loop, thereby forming a tuck loop in the wale of closed reverse stitches.

3,880,203

SLIDE FASTENER WITH WOVEN FABRIC SUPPORT AND PROCESS FOR MAKING SAME

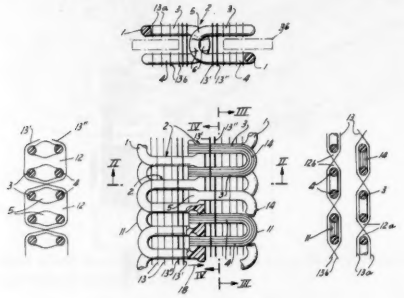
Alfons Fröhlich, Essen, Germany, assignor to Opti-Holding AG, Glarus, Switzerland

Filed Apr. 23, 1973, Ser. No. 353,731

Claims priority, application Germany, Apr. 22, 1972, 2219907

Int. Cl. D03d *3/00*

U.S. Cl. 139—384 B **9 Claims**



1. A slide-fastener stringer comprising a continuous monofilamentary coupling element with a multiplicity of parallel turns, each of said turns including a pair of substantially parallel shanks interconnected by a front bight portion coplanar therewith, a shank of each turn being connected with a shank of an adjoining turn by a rear bight portion, at least some of said front bight portions being provided with coupling formations, and a set of generally parallel warp threads extending substantially at right angles to the planes of said turns, said warp threads being interlinked in a weave pattern with elongate loops forming part of said coupling element, said loops being received in respective pockets formed by intersecting warp threads, each of said loops consisting of a pair of shanks of adjoining turns interlinked by a rear bight portion.

3,880,204

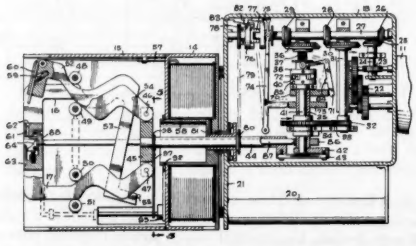
WIRE TYING MECHANISM

Forest M. Sarff, 12401 Filmore St., San Fernando, Calif. 91342, and Silas B. Birch, Jr., 9284 Dorrington Pl., Arleta, Calif. 91332

Filed Feb. 19, 1974, Ser. No. 443,224

Int. Cl. B21f *15/04*

U.S. Cl. 140—93 A **10 Claims**



1. A portable power driven wire tying mechanism comprising the combination of:

a housing;

motor means carried in said housing;

a pair of jaw members longitudinally movable to extend and retract with respect to said housing;

linkage means operably connecting said jaw members to said motor means for automatic reciprocating movement thereof;

a source of wire carried on said housing and having a portion thereof trained about one of said jaw members adapted to engage the other of said jaw members when in their extended position; and

means coupled to said motor means via said linkage means for twisting said wire portion when said jaw members are retracted and severing said twisted wire portion.

3,880,205

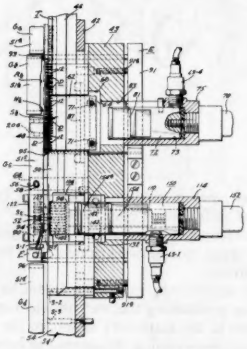
METHOD AND APPARATUS FOR STRAIGHTENING ELECTRONIC COMPONENTS

Frank V. Linker, 116 Beechtree St., Broomal, Pa. 19008; Caesar Crognale, 420 Garden Ln., Aston, Pa. 19014, and Hippocrates Sotiropoulos, 128 Dam View Dr., Media, Pa. 19063

Filed Dec. 10, 1973, Ser. No. 423,242

Int. Cl. B21f *1/02*

U.S. Cl. 140—147 **18 Claims**



1. Apparatus for reconditioning electronic devices having an elongated body portion and a plurality of leads extending from the opposite side edges of said body portion and disposed at a predetermined angle relative thereto comprising an elongated generally vertically oriented trackway, a spreader station having means for spreading outwardly any leads projecting inwardly relative to a predetermined plane through the longitudinal axis of said device and a forming station having means for aligning the leads on opposite side edges of said device in a row at a predetermined angle relative to said body portion and wherein the leads in each row are uniformly spaced relative to one another, said spreader and forming stations being located along said trackway whereby electronic devices are gravity fed through said stations.

3,880,206

WASHING, FILLING AND TAPPING VALVE ASSEMBLY

Mack S. Johnston, 26 Hitching Post Dr., Rolling Hills, Calif. 90275

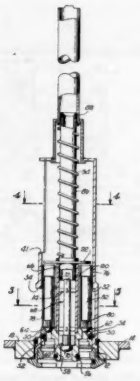
Division of Ser. No. 222,910, Feb. 2, 1972, Pat. No. 3,753,445. This application Aug. 7, 1973, Ser. No. 386,475

Int. Cl. B65b *3/04*

U.S. Cl. 141—5 **7 Claims**

1. The method of washing a keg, which keg contains an opening in a wall thereof; a generally tubular valve housing having one end thereof supported in said opening and an internal shoulder adjacent said one end; a valve body having an end portion mounted in said housing for limited axial

movement between a closed position in which said end portion is in sealing engagement with said shoulder, and an open position in which it is spaced therefrom; and openings in said valve housing adjacent said one end to provide communication with the interior of the keg and which are unobstructed when the valve body is in the open position, which includes the steps of:



positioning the keg with the opening in the wall thereof directed downwardly;

moving the valve body to the open position;

introducing cleansing fluid under pressure into the keg through said keg opening and the openings in the valve housing.

3,880,207

DEVICE FOR CONTROLLING FLUID SUPPLY AND INTRODUCTION OF DRAWING TUBES CARRIED ON AEROSOL VALVES WITHIN CONTAINERS

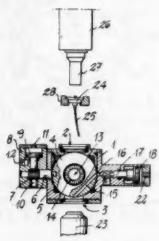
Giancarlo Giuffredi, Milan, Italy, assignor to Coster Tecnologie Speciali S.p.A., Milan, Italy

Filed July 23, 1973, Ser. No. 381,918

Claims priority, application Italy, Sept. 30, 1972, 29914/72

Int. Cl. B65b *31/02*

U.S. Cl. 141—20 **10 Claims**



1. In an assembly for supplying fluid to and closing an aerosol container, outer guide means formed with a hollow interior and with upper and lower coaxial apertures communicating with said hollow interior, said lower aperture being adapted to receive the open top end of an aerosol container, carrier means situated over said outer guide means for carrying a closure for the aerosol container and for delivering said closure to the aerosol container while said carrier means moves along the common axis of said apertures through said upper aperture toward said lower aperture where the open top end of the container is adapted to be situated, a body situated in said hollow interior of said outer guide means to be guided for movement by the latter, said body being formed with a pair of separate bores passing therethrough and spaced from and being out of communication with each other, one of said bores being an assembly bore and the other of said bores being a fluid-conveying bore, moving means operatively connected with said body for moving said body, while it is guided by said outer guide means, between an assembly position where said assembly bore has its axis coinciding with the common axis of said apertures so that when said body is in said assembly position said carrier means can displace a closure through said assembly bore to be assembled with a container at said lower aperture, and a fluid-conveying position where said assembly bore is out of line with the common axis of said apertures while said fluid-conveying bore communicates at one end with said lower aperture, and fluid-supply means communicating with the other end of said fluid-conveying bore at least when said body has been placed by said moving means in said fluid-conveying position, said fluid-conveying bore being situated when said body is in said assembly position thereof at a location where said one end of said fluid-conveying bore is out of communication with said lower aperture.

3,880,208

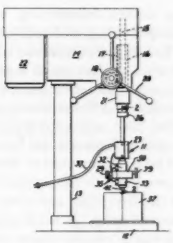
PLASTIC INJECTION MOLDING APPARATUS

Valia S. Golemon, 7845 Sancola Ave., Sun Valley, Calif. 91357

Filed Apr. 19, 1973, Ser. No. 352,688

Int. Cl. B65b *3/18*

U.S. Cl. 141—82 **5 Claims**



1. Plastic injection molding apparatus comprising a plastic heating cylinder,

a nozzle member adjacent one end of said cylinder,

said member having a nozzle orifice therein,

means on said cylinder supporting said nozzle member for endwise movement between extended and contracted positions relative to said cylinder,

spreader means intermediate said cylinder and said orifice forming a plurality of spreader passages for conveying plastic from said cylinder to said orifice,

each of said passages being of relatively smaller cross-sectional area than the cross-sectional area of said cylinder,

means for feeding plastic through said cylinder, said passages and said orifice,

valve means intermediate said spreader means and said orifice,

said valve means comprising,

an annular valve seat on said nozzle member and a valve member supported by said cylinder intermediate said valve seat and said orifice;

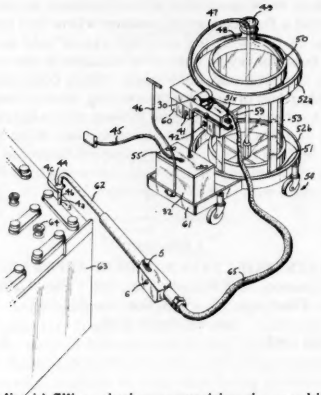
said valve member seating against said valve seat upon movement of said nozzle member to said extended position and unseating from said valve seat upon movement of said nozzle member toward said contracted position.

3,880,209

AUTOMATIC-LEVEL BATTERY CELL LIQUID FILLING PORTABLE DEVICE

David C. Haughn, 4228 N.W. 4th St., Miami, Fla. 33126, and Peter C. Gaddi, 288 E. 10th St., Hialeah, Fla. 35513

Filed May 9, 1974, Ser. No. 468,427
Int. Cl. B65b *1/36*
U.S. Cl. 141—95 **11 Claims**



1. A liquid-filling device comprising in combination: a power source means providing a direct current circuitry; a first lead connected to a negative terminal of the power source means and a second lead connected to a positive terminal of the power source means; connector means for connecting a pump in parallel between said first and second leads; a transistor including collector, base, and emitter leads, with the transistor connected in parallel between the first and second leads by the collector lead being connected to the first lead and the emitter lead being connected to the second lead; a first probe means connected to the first lead, and a second probe means connected to the second lead, at least one of the first and second probe means being spaced above and apart from the other as an upper probe means probe means for completing circuitry with the other and lower probe means when liquid level of liquid in contact with the lower probe means is of sufficient height to establish contact with the upper probe means to thereby establish an electric current flow conductance; a first relay means connected in electric current flow series between the emitter lead and the second lead; first switch means for making and breaking circuitry through the connector means to the pump to thereby turn on and off a pump connected thereto, said first relay means being operatively connected for controlling said first switch means.

3,880,210

STRAW CHARGING AND FEEDING APPARATUS

Arthur J. Randolph, 47111 Sonoma Hwy., and Albertus G. Horsting, 6685 Sonoma Hwy., both of Santa Rosa, Calif. 95405

Filed Aug. 2, 1973, Ser. No. 384,937
Int. Cl. B65b *43/48*
U.S. Cl. 141—175 **10 Claims**

1. Apparatus for charging small hollow tubes or straws with a predetermined amount of liquid comprising:

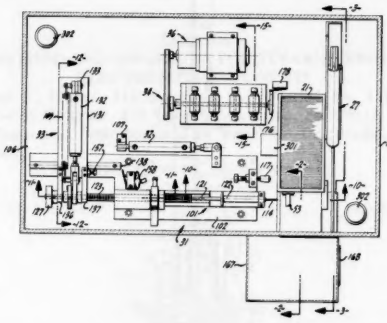
a hopper adapted to contain a plurality of tubes to be charged and having a slotted floor,

a slide plate mounted for controlled movement immediately beneath the hopper floor and having a transverse groove therein for receiving a tube from the hopper and moving the tube therefrom to a charging station,

a carriage mounted for reciprocal movement toward and away from said charging station parallel to the slide plate groove,

a syringe mounted on said carriage and having a plunger and a needle aligned with the axes of said slide plate groove at said charging station,

means controllably advancing said plunger in said syringe a predetermined amount of each actuation, and



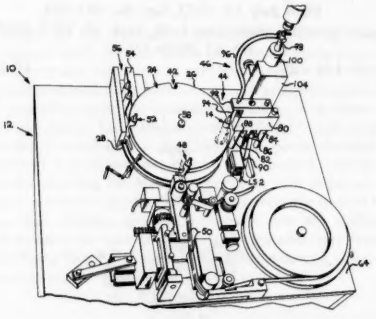
control means operable upon positioning of a straw in said charging station by said slide plate for moving the carriage toward the charging station to insert the syringe needle into the straw and advancing said syringe plunger to inject a predetermined amount of liquid from the syringe into the straw.

3,880,211

APPARATUS FOR FILLING CONTAINERS

Larry C. Gess, 1255 Fir Dr., Toledo, Ohio 43612

Division of Ser. No. 190,210, Oct. 18, 1971, Pat. No. 3,835,897. This application July 19, 1973, Ser. No. 380,685
Int. Cl. B67c *3/12*
U.S. Cl. 141—258 **7 Claims**

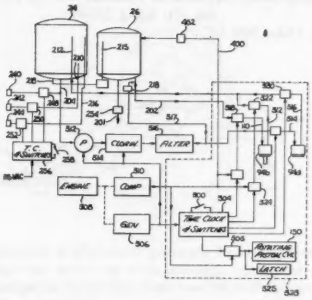


1. Apparatus for filling medicinal containers comprising means for holding a medicinal container upright with an opening at the top thereof, a hollow member for directing liquid into the container opening, means for holding said hollow member above the container holding means with the hollow member directed toward the opening, a supply container, plunger means in said supply container, means connecting said supply container with said hollow member, and means for moving said plunger means incremental distances further into said supply container to move amounts of liquid from the supply container through the connecting means and the hollow member when medicinal containers are to be filled.

3,880,212
MOBILE FLUID TREATMENT TANK SERVICING APPARATUS

James A. Harris, 8506 Henderson Rd., Ventura, Calif. 93003

Filed July 26, 1973, Ser. No. 382,672
Int. Cl. B65b *3/04*
U.S. Cl. 141—231 **25 Claims**



1. Service apparatus for removing material of a first characteristic from a service tank having first and second service tank connections and refilling said tank with a material of a second characteristic comprising:

first and second engaging means for engaging said first and second service tank connections respectively for fluid communication with said service tank;

first tank means for retaining said material of said first characteristic and a fluid;

second tank means for retaining said material of said second characteristic and a fluid;

first fluid flow means coupled between said first tank means and said first engaging means for selectively delivering said material of a first characteristic and said fluid from said first engaging means to said first tank means;

second fluid flow means coupled between said second engaging means and at least one of said first and second tank means for selectively delivering said fluid from said tank means to said second engaging means, and for selectively delivering said fluid from said second engaging means to at least one of said first and second tank means, and

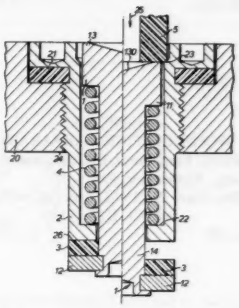
third fluid flow means for selectively delivering said material of a second characteristic and said fluid from said second tank means to said first engaging means.

3,880,213
FILLER VALVES FOR GAS LIGHTERS

Hans Schindler, Egelsbach, Germany, assignor to Braun Aktiengesellschaft, Frankfurt, Germany

Filed May 18, 1973, Ser. No. 361,514
Claims priority, application Germany, May 30, 1972, 2226224
Int. Cl. F16k *15/02*; **F23g** *2/52*
U.S. Cl. 141—295 **3 Claims**

1. A filler valve for a lighter to be replenished with liquefied gas from a filler bottle having a nozzle, the valve comprising a valve housing providing a throughway with an inner end presenting a valve seating face and an outer end stepped to receive and then to seal with the nozzle of an applied filler bottle, a depressible valve stem with clearance in the throughway, a sealing ring on said stem, and spring loading means for urging the stem to press the sealing ring against said valve seating face to close the valve, said stem having for engagement by the applied nozzle an end face which is substantially flush with the outer end of the throughway when the valve is closed and has at least one depression providing a flow path across said end face to the edge thereof, so that, when the nozzle of a filler bottle is applied to depress the valve stem and so open the valve, a path is first formed around the valve stem and nozzle for blow off and then the nozzle seals with the outer end of the throughway to close the blow off path and leave a filling path for liquefied gas to flow from the nozzle



across the end face of the depressed stem to the clearance space around said stem and thence through the open valve, the stem being returned by the spring loading means, when the nozzle is withdrawn, to a position in which the valve is closed and said end face is substantially flush with the outer end of the throughway.

3,880,214
ATTACHMENTS FOR PREVENTING FUEL PILFERAGE AND INCORRECT FUEL SUPPLY

James A. Slavin, New York, N.Y., assignor to Albert C. Nolte, Jr., Jericho, N.Y., a part interest

Continuation-in-part of Ser. No. 129,800, March 31, 1971, abandoned. This application Oct. 20, 1972, Ser. No. 299,390
Int. Cl. B65b *3/04*
U.S. Cl. 141—346 **8 Claims**

1. Apparatus for preventing fuel pilferage and/or incorrect supply, comprising the combination of co-acting attachments on a fuel filler pipe member and fuel pump nozzle member, said attachments including an element in one of said members having at least one outwardly, axially extending projection, a tube on the other of said members, means for opening and closing the end of said tube, latch and catch means between said opening and closing means and said tube, means retaining said opening and closing means in the closed position, axially extending means for receiving said at least one projection,

means movable by said at least one projection when inserted in said receiving means for unlatching said latch and catch means, for releasing said opening and closing means from said retaining means and for moving the same to an open position said receiving means comprising a lock having a lock slide longitudinally slidable between lock and open positions and wherein said at least one projection comprises key means for operating said slide.

3,880,215

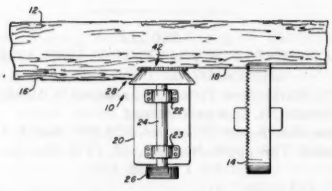
WOOD CHIPPING APPARATUS

Robert G. Mallery, Emporium, Pa., assignor to Robert Mallery Lumber Corp., Emporium, Pa.

Filed Nov. 21, 1973, Ser. No. 417,964

Int. Cl. B27c 9/10

U.S. Cl. 144—39 **5 Claims**



1. Apparatus for removing the rough outer surface of a log and forming a planar surface thereon comprising,

a support member,

a shaft rotatably mounted on said support member,

means for rotating said shaft at a preselected speed,

a head axially mounted on said shaft for rotation therewith, said head having an outer planar face,

a plate member fastened to said forward planar face and having a hub portion projecting outwardly from the center of said plate member,

a plurality of cutting elements secured to the surface of said head and projecting radially outwardly therefrom to provide a first cut across the grain of the log,

circular saw having a plurality of teeth projecting radially outwardly on the periphery thereof, said circular saw having a center aperture arranged to receive said hub portion, and

bolt means passing through said plate member and rigidly securing said circular saw blade to said head outer planar face for rotation therewith to provide a second cut parallel to the grain of the log.

3,880,216

METHOD AND APPARATUS FOR SHEARING TREES

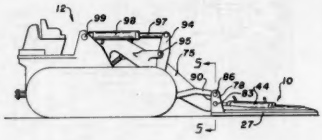
Donald E. Anderson; James K. Yorston, both of Prince George, British Columbia, and Thomas A. McLauchlan, Vancouver, British Columbia, all of Canada, assignors to Q.M. Machine Works Ltd., Prince George, British Columbia, Canada

Continuation of Ser. No. 303,220, Nov. 2, 1972, abandoned. This application Oct. 16, 1973, Ser. No. 406,892

Claims priority, application Canada, Nov. 5, 1971, 126941

Int. Cl. A01g 23/00

U.S. Cl. 144—309 AC **30 Claims**



1. The method of shearing trees which comprises cutting into the tree from opposite sides at a slow rate until the tree is about ready to fall, and then selectively completing the cut at a rapid rate to prevent damage to the portion of the falling tree at the cut.

3,880,217

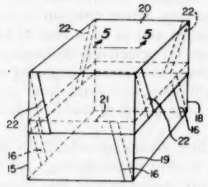
FLEXIBLE PLASTIC CONTAINER

William Musyt, and James D. Tremelin, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 887,178, Dec. 22, 1969, Pat. No. 3,703,201. This application Nov. 6, 1972, Ser. No. 303,901The portion of the term of this patent subsequent to Nov. 21, 1989, has been disclaimed.

Int. Cl. B65d 81/00

U.S. Cl. 150—.5 **6 Claims**



1. A container having edges and comprised of panels of fabric, said fabric having a coating of a low modulus elastomer on the surface thereof that does not fill the interstices of the fabric, each panel having its edges seamed together with an adjacent panel to form a multiple ply body with the panels being overlapped at least one inch in the seam area, each seam formed by overlapping of a gored-out portion being positioned in a bias relationship to the edges of the container body, all seams being displaced at least one inch from any aligned seam.

3,880,218

ASYMMETRICAL CONSTRUCTION TIRE

Steve Brajenovich, Naperville, Ill., assignor to The General Tire and Rubber Company, Akron, Ohio

Continuation of Ser. No. 226,679, Feb. 16, 1972, abandoned. This application Mar. 29, 1974, Ser. No. 456,109

Int. Cl. B60c 11/00

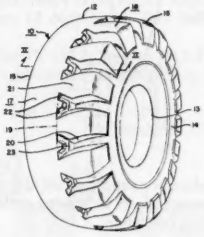
U.S. Cl. 152—209 R **2 Claims**

1. In a tire for heavy machinery vehicles, an asymmetric tread defined by first and second shoulders axially spaced

from the peripheral centerline of said tread, said tread comprising:

A. first circumferential tread portion having a smooth surface extending transversely from said first shoulder to said peripheral centerline and

B. a second circumferential tread portion having a non-smooth surface extending transversely from said second



shoulder to said peripheral centerline and adjoining said first tread portion substantially along said peripheral centerline, said non-smooth surface comprising wide, circumferentially spaced, substantially mutually parallel grooves extending from said second shoulder to said peripheral centerline, each of said grooves varying in depth from shallow adjacent said peripheral centerline to deep adjacent said second shoulder.

3,880,219
VEHICLE WHEELS

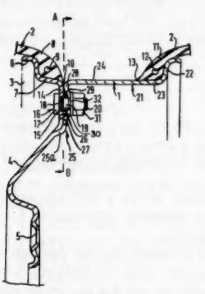
William Eric Mitchell, Coventry, England, assignor to Dunlop Limited, St. James's, London, England

Filed June 18, 1973, Ser. No. 370,707

Claims priority, application United Kingdom, July 6, 1972, 31618/72; Jan. 9, 1973, 01064/73; Jan. 9, 1973, 01065/73; Apr. 4, 1973, 16107/73

Int. Cl. B60c *5/16*

U.S. Cl. 152—404 **46 Claims**



1. A wheel rim comprising a pair of rim portions having annular attachment flanges extending inwardly in the radial sense relative to the axis of rotation of the rim, fastening means to provide an axial clamping load to urge the attachment flanges towards one another, and a sealing ring located in a circumferentially extending channel formed between the attachment flanges and bounded by circumferentially extending radially spaced-apart abutment zones through which substantially the whole axial clamping load on the attachment flanges is carried, the sealing ring being of smaller width, measured in the radial direction relative to the rim, than the width of the channel measured in said radial direction.

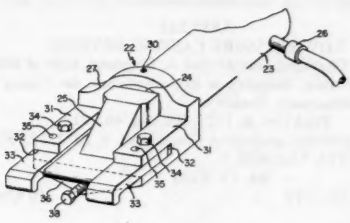
3,880,220
TIRE BEAD LOOSENING TOOL

Harold A. Bunts, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 317,015, Dec. 20, 1972, abandoned. This application Mar. 26, 1973, Ser. No. 344,793

Int. Cl. B60c *25/06*

U.S. Cl. 157—1.17 **4 Claims**



1. A tire-bead-loosening tool adapted to loosen the bead of a tire on a special wheel rim having at least one removable side ring retained thereon by an annular radially outwardly extending side ring retaining flange, the side ring bearing against the axially inner surface of the retaining flange when in its normal assembled position on the rim with an inflated tire bearing against the side ring and having a tool-receiving offset at the axially inner edge of the retaining flange extneding at least part of the distance around the circumference thereof, the bead-loosening tool comprising:

A. an actuator;

B. a plunger driven by the actuator for imparting inward movement to the side ring and the tire bead away from the ring retaining flange; and

C. hook means mounted on the actuator especially adapted for engaging the tool-receiving offset in the retaining flange to hold the actuator in spaced relationship to the side flange during actuation of the plunger.

3,880,221
METHOD FOR CONTINUOUS CASTING OF METALS

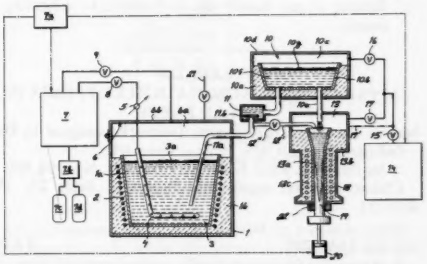
Anguel Tonchev Balevski, and Ivan Dimov Nikolov, both of Sofia, Bulgaria, assignors to Institut Po Melalognanie I Technologia No. Metalite, Sofia, Bulgaria

Filed Apr. 5, 1972, Ser. No. 241,251

Claims priority, application Bulgaria, Apr. 7, 1971, 17295The portion of the term of this patent subsequent to Mar. 21, 1989, has been disclaimed.

Int. Cl. B22d *27/20*

U.S. Cl. 164—55 **5 Claims**



1. A method of making a metal body comprising the steps of:

a. treating a melt of molten metal with a gas mixture consisting of at least one soluble gas capable of modifying a

metallurgical characteristic of said body at a relatively low partial pressure and an inert gas;

b. continuously casting the melt treated in step (a) and solidifying the cast melt into an elongated body; and

c. maintaining the solubilized gas dissolved in the molten metal in solution during the continuous casting and solidification in step (b) by providing thereabove a gas atmosphere having a relatively high partial pressure of said soluble gas.

3,880,222

LOW-PRESSURE CASTING DEVICES

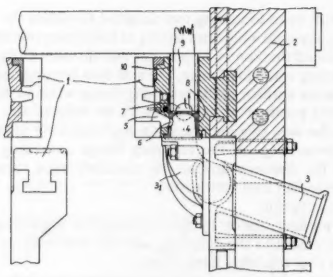
Pierre R. Chatourel, and Michel A. Lingrand, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt, France

Filed Oct. 2, 1973, Ser. No. 402,913

Claims priority, application France, Oct. 9, 1972, 72.35714; Jan. 11, 1973, 73.00860

Int. Cl. B22d *27/00*

U.S. Cl. 164—119 **10 Claims**



1. A low-pressure casting device for chill-casting parts from non-ferrous alloys comprising:

a chill-mold located adjacent a melting furnace but at a higher elevation,

mold impressions in the chill-mold corresponding to the parts to be cast,

means defining a casting inlet in said mold impressions,

a casting tube connecting the melting furnace to said chill-mold,

means for supplying neutral gas to the chill-mold,

a cover member fitted in a corresponding cavity of the chill-mold, said cover member having an opening coincident with the casting inlet of said mold impressions,

said casting tube being connected to said cover member for communication with said cavity of the chill-mold, and

said cavity communicating with a duct in the chill-mold forming a gas burner and connected to a heating gas supply.

3,880,223

APPARATUS FOR AUTOMATICALLY PRODUCING MOLD PARTS

Marius Gunnergaard, Lyngby, Denmark, assignor to Dansk Industri Syndikat A/S, Herlev, Denmark

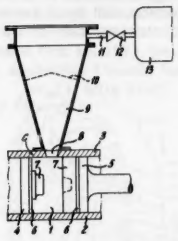
No Drawing. Filed Sept. 19, 1972, Ser. No. 290,369

Claims priority, application Denmark, Sept. 23, 1971, 4651/71

Int. Cl. B22c *15/28*

U.S. Cl. 164—200 **4 Claims**

1. Apparatus for automatically producing mold parts, comprising a horizontally disposed mold chamber having a pair of opposite end walls of which at least one is axially displaceable, a mold material supply bin above said chamber, at least one passage opening means forming communication between the top of said mold chamber and the bottom of said supply bin for vertically supplying material from said bin to said chamber, and at least one pressurized air tank communicating with said supply bin above the normal level of material therein



through valve means for supplying air acting on said supplied material in two successively increasing pressure stages during the chamber filling operation.

3,880,224

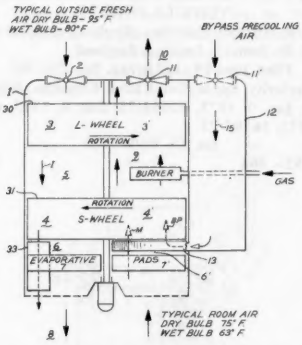
3-STREAM S-WHEEL AND COOLING MODE OPERATION

Sanford A. Weil, Chicago, Ill., assignor to Gas Developments Corporation, Chicago, Ill.

Continuation of Ser. No. 791,000, Feb. 23, 1971, abandoned. This application Feb. 23, 1971, Ser. No. 118,196

Int. Cl. F25b *13/00*

U.S. Cl. 165—2 **18 Claims**



1. In a method for cyclic conditioning of air including the steps of:

1. passing outside air as a first air stream through a first portion of a rotating dehydrating L-wheel to produce relatively dry air;

2. passing said relatively dry air through a first portion of a rotating sensible heat exchanging S-wheel to produce relatively cool dry air, for use in an enclosed space;

3. withdrawing a primary stream of exhaust air from said conditioned space through an evaporative pad;

4. passing said exhaust air as a second air stream through a second portion of said S-wheel whereby said S-wheel is cooled;

5. passing a portion of said exhaust air through a heating section;

6. passing said exhaust air through a second portion of said L-wheel to be exhausted to the outdoors;

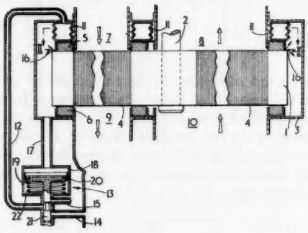
said steps **1** and **2** comprising the cooling half of said conditioning cycle and said steps **4–6** comprise the regenerative half of said conditioning cycle, the improvement which comprises in combination the added step of:

7. directing a stream of bypass air as a third air stream through a portion of said S-wheel prior to being cooled by said primary exhaust air stream whereby heat is exchanged between said three streams, said S-wheel is precooled, and its efficiency increased without an increase in its mass.

3,880,225
ROTARY REGENERATIVE HEAT EXCHANGER

Robert Noel Penny, 12 Alderbrook Rd., Solihull, Warwickshire, England

Filed Dec. 7, 1972, Ser. No. 313,174
Claims priority, application United Kingdom, Dec. 18, 1971, 58901/71
Int. Cl. F28d *19/00*
U.S. Cl. 165—9 **4 Claims**



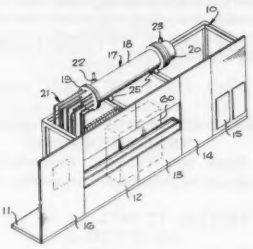
1. A rotary regenerative heat exchanger comprising a rotatable disc-like matrix having heat exchange passages therein extending between end faces of the matrix, and seals cooperable with said end faces and defining areas thereof through which the fluids between which heat exchange is to be effected will flow in separated streams, at least one of said seals being in the form of a closed loop and having a hollow bellows-like cross-section and inlet means communicating with the interior of said hollow seal for the admission thereto of a pressurising fluid, the head exchanger also including means for detecting the rate of flow of leakage of heat exchange fluid between one of said seals and the adjacent end face of the matrix, a fluid-responsive device to control the supply of pressurising fluid to said pressurised seal in response to the detected rate of leakage flow and duct means provided adjacent said one seal to lead said leakage flow of fluid to said fluid-responsive device.

3,880,226
WATER QUALITY ANALYSIS SYSTEM WITH MULTICIRCUIT SINGLE SHELL HEAT EXCHANGER

Edwin A. Houser, 3400 Rosehedge Dr., Fullerton, Calif. 92634, and Bernell W. Schwindt, 20525 San Gabriel Valley Dr., Walnut, Calif. 94396

Division of Ser. No. 168,096, Aug. 2, 1971. This application Feb. 27, 1974, Ser. No. 446,130
Int. Cl. F22b *37/38*
U.S. Cl. 165—11 **6 Claims**

1. A water quality analysis system in steam generating plants of the type wherein a plurality of water and steam samples at widely varying inlet temperatures are reduced to a common lower temperature range so that a plurality of separate analyses may be performed on the samples, said system comprising:
a. a system rack having a plurality of apparatus modules mounted therein, said modules comprising at least a first high temperature and pressure module, a second low temperature and pressure module, a third stream switching and flow metering module, and an analyser module containing apparatus for performing said plurality of analyses, said system rack comprising a rectangular box-like frame having panels mounted on the front thereof and being open at the back and ends thereof to afford access to the apparatus of said modules;
b. a single closed shell multicircuit heat exchanger mounted on top of said system rack, said heat exchanger having a closed path for pressurized coolant flow therethrough;
c. a single coolant inlet means and a single coolant outlet means each operatively connected to said shell;
d. a plurality of pairs of water and steam sample conducting tubes extending from said rack mounted modules into said heat exchanger through one end thereof, one tube of each pair being for sample inlet and the other tube of each pair being for sample outlet, said pair of tubes unit-

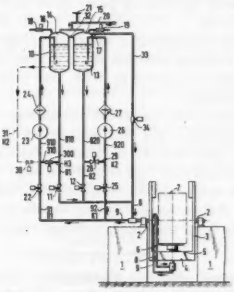


ing to form a continuous sample flow path within said heat exchanger; and
e. means operatively associated with said heat exchanger to individually vary the rate of flow of pressurized coolant placed in heat exchange with each of said sample flow paths formed by said pairs of sample tubing in said heat exchanger so that said single housing multicircuit heat exchanger simultaneously cools samples entering it at widely different inlet temperatures to substantially the same lower range of outlet temperatures.

3,880,227
ARRANGEMENT FOR HEATING AND COOLING A DOUBLE-WALLED MOLD

Adolf Bauer, Olching, Germany, assignor to Thermovox GmbH, Munich, Germany

Filed June 8, 1973, Ser. No. 368,079
Claims priority, application Germany, June 13, 1972, 2228630
Int. Cl. F25b *29/00*
U.S. Cl. 165—27 **12 Claims**



1. An arrangement for heating and cooling a double-walled mold having thin walls, especially for molding bodies of plastic material, said double-walled mold defining between the walls thereof a space adapted to be flown through by a liquid heating or cooling medium, said arrangement comprising a pair of closed pressure tanks located at an elevation higher than that of said mold and respectively adapted to contain a liquid cooling and a liquid heating medium; a feed conduit connect-

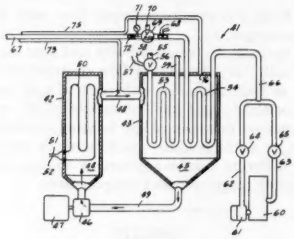
ing each of said tanks with said space of said mold for feeding liquid medium by gravity from the respective tank into said space; a return conduit connecting each of said tanks with said space of said mold for returning liquid medium from said space into the respective tank; valve means in each of said conduits for permitting and preventing passage of liquid medium therethrough; a single suction pump provided only in each of said return conduits for producing a suction pressure at the junction of said return conduit with said space which is slightly greater than the pressure at which the respective liquid medium enters said space through said feed conduit; and heat exchanger means in each of said return conduits, downstream of the pump, for heating, respectively cooling the fluid medium passing therethrough.

3,880,228

METHOD AND APPARATUS FOR CONTROLLING THE VICOSITY OF PAINT

Clifford L. Houk, and Wilfred D. Kennedy, both of Findlay, Ohio, assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Nov. 17, 1972, Ser. No. 307,644
Int. Cl. F25b *27/00*
U.S. Cl. 165—30 **3 Claims**



1. An apparatus for delivering paint at a predetermined temperature to a spray means comprising:
- a reservoir for holding paint,
- means for circulating paint in a continuous loop from said reservoir back into said reservoir,
- a heat exchange vessel,
- means tapping off said loop for delivering a relatively small stream of circulating paint from said reservoir through said vessel,
- means for circulating a relatively large stream of heated heat exchange medium through said vessel and into heat exchange relationship with the paint stream passing therethrough,
- coil means in said vessel for circulating a stream of coolant substantially larger than said stream of paint through said vessel, said stream of heat exchange medium flowing against said coil means in its passage through said vessel in heat exchange relationship therewith, and
- delivery means for delivering the heated stream of paint directly from said heat exchange vessel to a spray means.

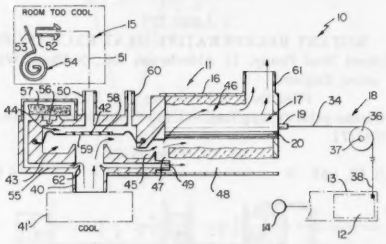
3,880,229

HEAT EXCHANGE SYSTEM AND METHOD AND CONTROL DEVICE THEREFOR

Edward N. Caldwell, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 28, 1973, Ser. No. 419,606
Int. Cl. B60h *1/00;* **B61d** *27/00*
U.S. Cl. 165—40 **40 Claims**

23. A control unit for a heat exchange system or the like comprising a housing means having means adapted to receive a source of cooling fluid and a source of heating fluid, thermally operated means carried by said housing means and adapted to control the amount of flow of heat exchange output fluid from a source thereof that is to be utilized for a heat exchange function in a zone in relation to the temperature of said thermally operated means, and means adapted to be controlled by a zone temperature sensing means for directing one of said cooling fluid and said heating fluid to said thermally operated means to cause the same to be adapted to change the amount of flow of said output fluid when the temperature effect in said zone deviates from a predetermined temperature a certain amount whereby a wide temperature swing can be provided for said thermally responsive device with only a narrow temperature swing of said temperature effect in said zone.

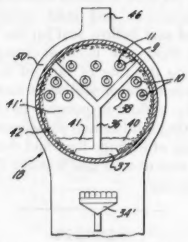


3,880,230

HEAT TRANSFER SYSTEM

Richard L. Pessolano, Sparta, and Robin B. Rhodes, Parsippany, both of N.J., assignors to Isothermics Incorporated, Clifton, N.J.

Filed June 1, 1973, Ser. No. 366,193
Int. Cl. F28d *15/00*
U.S. Cl. 165—105 **31 Claims**



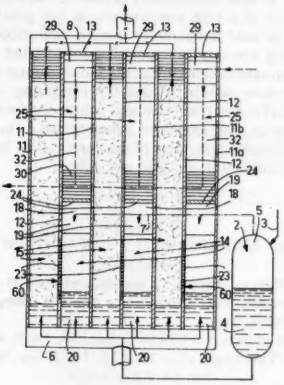
1. A heat transfer system, comprising:
- a. a heat source;
- b. a plurality of heat pipes:
- c. a thermal transformer thermally linked to both said heat pipes and said heat source, said transformer comprising:
  - i. a container,
  - ii. a working fluid and its vapor, said fluid and said vapor being essentially in equilibrium,
  - iii. evaporating surfaces depending from the internal surfaces of said transformer that are wetted by said working fluid and that are proximate to said heat source, and
  - iv. condensing surfaces depending from the exterior of those areas of said heat pipes that are in thermal contact with said transformer; and
- d. a first chamber containing a medium with defined heat transfer characteristics, said chamber thermally coupled to said heat pipes,

whereby a uniform heat transfer from said heat source to said medium is obtained.

3,880,231
HEAT-EXCHANGER AND METHOD FOR ITS UTILIZATION

Pierre Gauthier, Antony, France, assignor to L'Air Liquide, Societe Anonyme pou l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Sept. 26, 1972, Ser. No. 292,457
Claims priority, application France, Oct. 1, 1971, 71.35393
Int. Cl. F28f *3/00*
U.S. Cl. 165—166 **8 Claims**

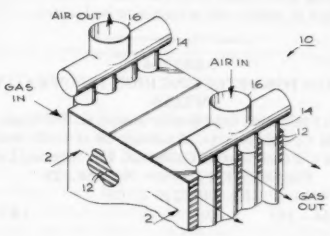


1. In a plate-type heat exchanger comprising a plurality of metal plates (**11***a*, **11***b* and **12**) having a substantially similar contour and being parallel to and spaced apart from each other along a first axis, said exchanger comprising a first closure means (**13**) coupling said plates to each other along the edge of each plate, said first closure means and said plates delimiting a plurality of passages (**14**, **15** and **25**); at least three consecutive plates defining respectively a first passage (**14**) for the reception of one portion taken from one of a first fluid in liquid form (**4**) and a second fluid in gaseous form (**5**), comprised between a first plate (**11***a*) and a second plate (**12**), and at least one second passage (**15**) for receiving another portion taken from the other (**4**) of said first fluid and said second fluid and for circulating said one portion and said another portion combined together in directions parallel to a second axis extending parallel to said metal plates, comprised between said second plate (**12**) and a third plate (**11***b*); a transfer zone (**60**) formed in said second plate (**12**) for transferring at least part of said one portion from said first passage (**14**) towards said second passage (**15**), said zone extending in a direction parallel to a third axis perpendicular to said first and second axes; said first closure means (**13**) defining respectively a first inlet (**16**) toward said first passage (**14**) for introducing said one portion, and at least one second inlet (**33**) towards said second passage (**15**), adjacent to one extremity of said second passage, for introducing said another portion, said transfer zone (**60**) being provided between said first and said second inlets; first distribution means (**18**, **19**) disposed in said first passage (**14**) for distributing said one portion from said first inlet (**16**) towards the interior of said first passage (**14**), over a distance in a direction parallel to said third axis; second distribution means (**35**, **36**) disposed in said second passage (**15**) for distributing said another portion from the second inlet toward the interior of said second passage, over a distance in a direction parallel to said third axis; said first closure means (**13**) defining at least one first outlet (**34**) from said second passage (**15**) adjacent to the other extremity of said second passage, for evacuating the combined said one portion and said another portion; and means acting in heat exchange relation with at least said second passage (**15**) for defining a third passage (**25**) for a third fluid; the improvement comprising a third inlet (**17**) toward said first passage, defined by said first closure means (**13**), adjacent to said second inlet (**33**) and to one extremity of said first passage, for introducing into said first passage (**14**) a further portion of the fluid (**4**) from which said another portion is taken, so as to establish a level of said first fluid in liquid form within said first passage; and third distribution means (**20**, **21**) arranged in said first passage for distributing said further portion, from the third inlet (**17**) toward the interior of said first passage, over a distance in a direction parallel to said third axis, said transfer zone extending also in a direction parallel to said second axis.

3,880,232
MULTI-MATERIAL HEAT EXCHANGER CONSTRUCTION

Kenneth O. Parker, Rolling Hills Estates, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed July 25, 1973, Ser. No. 382,465
Int. Cl. F28b *21/08*
U.S. Cl. 165—166 **4 Claims**



1. A heat exchanger core of the counterflow fluid type wherein one of the fluids is introduced to and removed from the core in a direction orthogonal to the direction of fluid flow through the core, comprising:

a plurality of stacked plates formed to define layered passages for fluid streams flowing between opposite ends of the core, adjacent pairs of said streams being arranged to flow in opposed directions, one of said pair of streams comprising a hot gas and the other being a fluid entering the core at a cooler temperature;

each of said plates comprising sections of different materials having different stress- and heat-resistance qualities, said sections being edge-welded together along juncture lines between adjacent sections, the sections and welded edges extending transversely to the direction of fluid flow through the core;

said plates being disposed within the heat exchanger such that the sections of highest stress- and heat-resistance qualities are located adjacent the hot gas inlet end of the heat exchanger core and the sections of lowest stress- and heat-resistance qualities are located adjacent the inlet end of the cooler temperature fluid.

3,880,233
WELL SCREEN

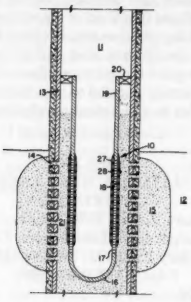
Thomas W. Muecke, and John W. Graham, Houston, both of Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed July 3, 1974, Ser. No. 485,479
Int. Cl. E21b *43/00*
U.S. Cl. 166—205 **9 Claims**

1. A subsurface sand control device for use in a well which comprises:

a screen having a plurality of openings formed therein; and a protective coating of a fusible material covering the interior and exterior of said screen for preventing corrosion and temporarily closing said openings thereof for

preventing premature plugging during storage and handling, said fusible material having a melting point or



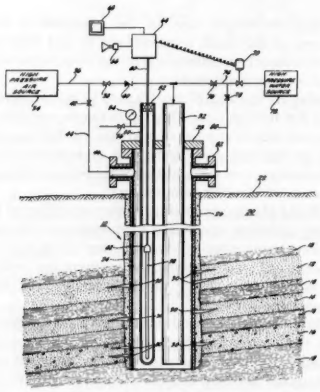
softening point equal to or less than the subsurface temperature at which said screen is to be located.

3,880,234

APPARATUS FOR DETECTING HIGH TEMPERATURE IN WELLS

William E. Showalter, Seal Beach; Joseph G. Huffman, Brea, and John C. Caldwell, Jr., Anaheim, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed May 2, 1973, Ser. No. 356,329
Int. Cl. E21b 47/06
U.S. Cl. 166—251 15 Claims



1. A device for detecting the occurrence of a high temperature at any point within a well penetrating a subterranean formation having at least one subsurface interval potentially susceptible to high temperatures, which comprises in combination:

a well penetrating said subterranean formation and passing into or through said subsurface interval potentially susceptible to high temperature;

a small diameter tubing suspended in said well and extending from the surface through that portion of said subsurface interval potentially susceptible to high temperature that is transversed by the well;

an elongated temperature sensor capable of sensing the occurrence of a high temperature at any point along its length, said temperature sensor being comprised of an elongated metallic outer tube and a substantially coaxial center conductor, the annulus between said outer tube and said center conductor being packed with a eutectic meterial having a first electrical resistance at temperatures below the eutectic temperature and a second different electrical resistance at temperatures above the eutectic temperature;

cable means for suspending said temperature sensor in said small diameter tubing so as to extend a substantial distance through said interval potentially susceptible to high temperature; and

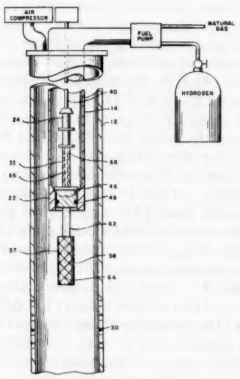
detector means located at the surface and electrically connected to said temperature sensor for detecting the occurrence of a high temperature at any point along the length of said temperature sensor, said detector means including a means for impressing a controlled a.c. voltage between said center conductor and said outer tube of said temperature sensor, means for measuring the flow of electrical current between said center conductor and said outer tube; and means to generate a d.c. output signal having a value indicative of the current flow between said center conductor and said outer tube.

3,880,235

METHOD AND APPARATUS FOR IGNITING WELL HEATERS

Holland J. Berry; William C. Hardy, and Dale W. Zadow, all of Richardson, Tex., assignors to Sun Oil Company (Delaware), Dallas, Tex.

Division of Ser. No. 889,060, Dec. 30, 1969, Pat. No. 3,680,635. This application May 15, 1972, Ser. No. 255,882
Int. Cl. E21b 43/24
U.S. Cl. 166—302 17 Claims



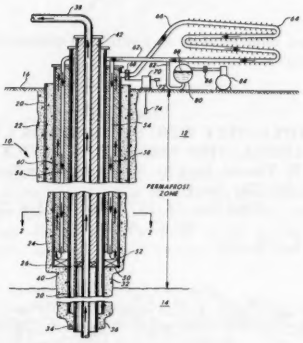
1. Apparatus for igniting a fuel fed well heater located in a wellbore comprising: a catalytic material on a heat resistant support adapted to be located adjacent the well heater, first conduit means extending from the earth's surface and providing a fluid flow path from the surface to the catalytic material, means for directing one portion of a fuel mixture through the first conduit means to one side of the catalytic material and means for diffusing such one portion of the fuel mixture over the catalytic material before contacting, another portion of the fuel mixture, and second conduit means extending from the surface for providing a fluid flow path for the other portion of the fuel mixture.

3,880,236

METHOD AND APPARATUS FOR TRANSPORTING HOT FLUIDS THROUGH A WELL TRAVERSING A PERMAFROST ZONE

Paul J. Durning, La Habra, and Joel P. Robinson, Downey, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Aug. 9, 1972, Ser. No. 279,174
Int. Cl. E21b 43/00
U.S. Cl. 166—302 14 Claims



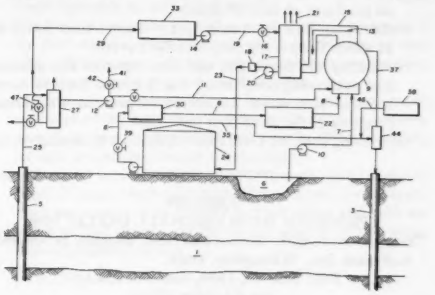
1. A refrigerated well for conducting hot fluids through a permafrost zone, which comprises:
- a first casing extending a substantial distance into said permafrost zone and cemented therein;
- a second casing placed concentrically within said first casing, said second casing extending below said first casing and said second casing being cemented below the bottom of said first casing;
- sealing means at the top and the bottom of said first casing for providing a fluid tight closure between said first and second casings so as to form a closed annular refrigeration chamber;
- a production tubing within said second casing to convey fluids from an underlying producing strata to the surface or vice versa, said tubing being insulated through said permafrost zone;
- at least one insulated refrigerant tube in said annular refrigeration chamber extending from the surface to the bottom of said chamber;
- a heat exchanger at the surface for conducting a refrigerant in heat exchange relationship with ambient air;
- conduit means for connecting said annular refrigeration chamber to said heat exchanger and for connecting said heat exchanger to the upper end of each of said refrigerant tubes to provide a closed refrigeration circuit;
- valve means in said conduit means for stopping the circulation of regrigerant through said refrigeration circuit;
- a reservoir of liquid refrigerant connected to said refrigeration circuit; and
- means for introducing gas under pressure into said reservoir and maintaining said gas at a pressure sufficient to prevent vaporization of said liquid refrigerant in said refrigeration circuit.

3,880,237

PREVENTION OF SCALE IN PETROLEUM PRODUCTION BY ALKALINE FLOODS

Earl S. Snavely, Jr., Arlington, Tex., and Theodore A. Bertness, Whittier, Calif., assignors to Mobil Oil Corporation, New York City, N.Y.

Continuation-in-part of Ser. No. 326,929, Jan. 26, 1973, Pat. No. 3,844,349. This application May 6, 1974, Ser. No. 467,041
Int. Cl. E21b 43/24, 43/27
U.S. Cl. 166—303 9 Claims



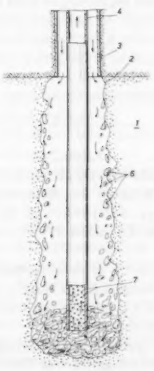
1. In a method of producing petroleum from a petroleum-bearing formation penetrated by a well means by injectitng a caustic fluid into said formation, the method of treating said fluid to prevent scale deposition comprising:
- providing a fluid having bicarbonate ions for injection into said petroleum-bearing formation;
- treating said fluid having bicarbonate ions with sulfur dioxide to reduce the bicarbonate ion concentration of said fluid;
- adding a caustic to said treated fluid to form said caustic fluid;
- injecting said caustic fluid via said well means into said information; and
- producing said petroleum via said well means from said formation.

3,880,238

SOLVENT/NON-SOLVENT PYROLYSIS OF SUBTERRANEAN OIL SHALE

Min Jack Tham, and Philip Joseph Closmann, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed July 18, 1974, Ser. No. 489,639
Int. Cl. D21b 43/24; E21b 43/28
U.S. Cl. 166—303 6 Claims



1. In a shale oil-producing process in which a rubble-containing cavern is formed within an otherwise substantially

impermeable subterranean oil shale that contains water-soluble minerals and fluid is injected into and withdrawn from the cavern, the improvement which comprises:

in an upper portion of said cavern, injecting hot solvent-fluid having a significant miscibility with at least one organic or inorganic solid or liquid pyrolysis product of said oil shale;

in an upper portion of said cavern, injecting hot non-solvent-gas having a relatively insignificant miscibility with any of the organic or inorganic solid or liquid pyrolysis products of said oil shale;

withdrawing fluid from said cavern from a level below any at which fluid is injected into the cavern;

correlating the properties and flow rates of the inflowing and outflowing portions of said fluids so that the cavern remains sufficiently liquid-free to prevent a significant plugging of the fluid flow path; and

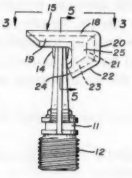
recovering shale oil from fluid withdrawn from said cavern.

3,880,239

SPRINKLER WITH SIDEWALL DEFLECTOR

Theodore Vorkapich, Brunswick, Ohio, assignor to American LaFrance Inc., Willoughby, Ohio

Filed Jan. 18, 1974, Ser. No. 434,684
Int. Cl. A62c *37/10*
U.S. Cl. 169—37 **7 Claims**



1. A fire extinguishing sprinkler having a base with a discharge opening therethrough arranged for discharge of a fire extinguishing fluid, arms extending from said base to form a frame overlying the opening and a deflector mounted on the frame having at least one first deflecting surface at a right angle to the direction of flow through the discharge opening, said deflector having a right angularly disposed cup-shaped portion depending from said first deflecting surface on one side of said frame and including at least one second deflecting surface at a right angle to said first deflecting surface and a further deflecting surface extending from said second deflecting surface toward said frame with side walls joining said further deflecting surface with portions of said first and second deflecting surfaces so as to form said cup-shaped portion.

3,880,240

IMPLEMENT MARKER

Larry L. Jarrett, Floydada Rt., Silverton, Tex. 79257

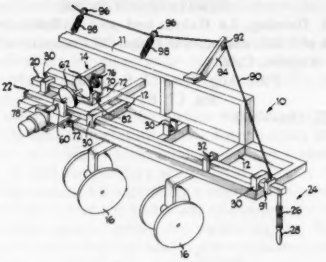
Filed Apr. 11, 1974, Ser. No. 459,881
Int. Cl. A01b *17/00, 25/00*
U.S. Cl. 172—131 **10 Claims**

3. A row marker for a farm implement comprising:

a. at least one elongated bar having a marking tool on at least one end for engaging the soil and for providing an indicating mark therein;

b. anti-frictional guide means carried by said implement mounting said elongated bar for reciprocal movement across said implement; and

c. friction drive means including a hydraulic motor drivingly connected to a friction roller frictionally engaging with a substantially planar surface of said bar for reciprocating said marking tool to a marking position on one side of



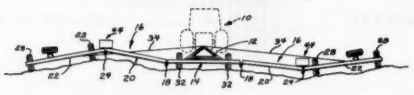
said implement or to a retracted position adjacent said implement.

3,880,241

MULTIPLE-PIECE WING SECTIONS FOR CULTIVATOR AND OSCILLATION PREVENTING DEVICE FOR SAME

James H. Vincent, Sac City, Iowa, assignor to Royal Industries, Inc., Sac City, Iowa

Filed Dec. 18, 1972, Ser. No. 316,229
Int. Cl. A01b *15/14*
U.S. Cl. 172—311 **4 Claims**



1. A farm implement of the foldable, sectional tow type comprising a wheeled cart bearing a central tool supporting section and mounting said central section for movement about a generally horizontal axis between a work performing position and a transport position; a pair of tool supporting wing sections, one on each side of said central section, each wing section being hingedly connected to said central section and movable therewith between said transport position and said work performing position, each of said wing sections being flexible so as to permit movement of at least one portion of each wing section relative to another portion thereof to allow said wing sections, when in the work performing position, to flex to conform to the contour of the underlying terrain whereby the length of each wing section can be maximized to thereby maximize the width of swath of the implement when said central section and said wing sections are in said work performing position; and means on each of said wing sections and interconnecting said portions for dampening oscillation between said portions when said wing sections are in said transport position while allowing said portions to flex when said wing sections are in said work performing position, each dampening means includes a pair of resilient elements one adapted to be compressed when said portions move relative to each other in one direction, the other adapted to be compressed when said portions move relative to each other in a direction opposite said one direction.

3,880,242

SWEEP ATTACHMENT

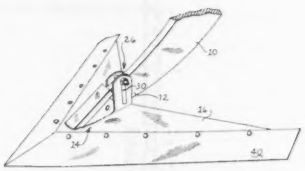
Thelmer A. Rogers, P.O. Drawer 1589, Lubbock, Tex. 79408

Filed Apr. 30, 1973, Ser. No. 355,524
Int. Cl. A01b *15/06, 39/22*
U.S. Cl. 172—740 **5 Claims**

2. An earth working device adapted to be attached to

a. a ripper having

i. a tip that
ii. angles forward and downward;
b. comprising:
c. a plate adapted to be carried in a horizontal position to which may be attached earth working tools,
d. a pocket consisting of a ripper tooth welded to the top of the plate, said ripper tooth having an open back,
e. the pocket including
i. two sides, one adapted to contact each side of the ripper,
ii. a top which slopes downward and contacts the plate at the forward extremity of the top, and



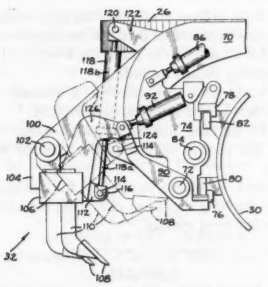
iii. a bottom in contact with the plate,
f. a clamp at the open back of the pocket formed of
i. two legs open at the top and attached to the plate,
ii. the legs aligned with the sides of the pocket, and, therefore, adapted to contact each side of the ripper, and
iii. an elongated slot through each leg,
iv. the elongated slots adapted to receive a bolt so the bolt will be across the open top to clamp the legs together on the ripper to hold the plate thereto.

3,880,243

ROAD BUILDING MACHINE WITH TWO ADJUSTABLE WORK IMPLEMENTS

Raymond A. Gurries, and Burnett J. Christensen, both of San Jose, Calif., assignors to CMI Corporation, Oklahoma City, Okla.

Continuation of Ser. No. 114,348, Feb. 10, 1971, abandoned, which is a continuation of Ser. No. 780,816, Dec. 3, 1968, abandoned. This application Apr. 11, 1972, Ser. No. 243,098
Int. Cl. E02f *3/12*
U.S. Cl. 172—784 **2 Claims**



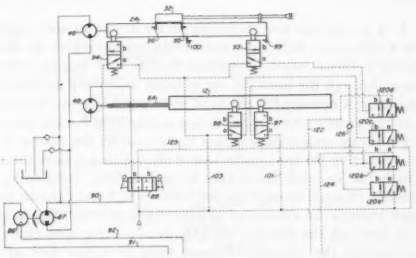
1. A road building machine which comprises
a mobile frame,
support means mounted from said frame for adjustment,
means connected between said adjustable support means and said frame for clamping said adjustable support means in its adjusted position relative to said frame,
a first working implement,
means adjustably mounting said first working implement from said support means,
means including extensible links connected between said support means and said first working implement operable to adjust the latter,
a second working implement,
separate means adjustably mounting said second working implement from said support means,
separate means including extensible links connected between said support means and said second working implement operable to adjust the latter,
a fixed stop connected to said support means and engaged by said second implement to preclude motion of said second implement in response to operative engagement with the material being worked thereby,
said separate adjustment means being operative to move said second implement away from said stop to its inoperative disposition and towards said stop to effect clamping of said second implement thereagainst,
said first and second implements being supported for movement in unison with said support means and for independent movement with respect to each other and with respect to said support means by adjustment of said separate adjustment means.

3,880,244

TELESCOPIC ROCK DRILL FEED

Clarence O. Boom, Littleton, and Laurence B. Hanson, Pine, both of Colo., assignors to Gardner-Denver Company, Quincy, Ill.

Division of Ser. No. 315,055, Dec. 14, 1972, Pat. No. 3,807,510. This application Feb. 4, 1974, Ser. No. 439,516
Int. Cl. E21c *5/02*
U.S. Cl. 173—19 **5 Claims**



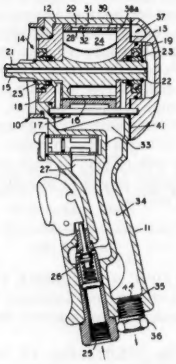
1. In a telescopic rock drill feed mechanism:
an elongated support;
an elongated drill guideway mounted on said support for reversible movement therealong;
a drill motor mounted on said guideway for reversible movement therealong;
power means for moving said guideway along said support and said drill motor along said guideway between forward and rearward limit positions; and,
control means for reversing said power means, said control means including a first pressure fluid control circuit having sensing means disposed on said feed mechanism and including a valve disposed on said guideway to be actuated by said drill motor and a valve disposed on said elongated support to be actuated by said guideway, said valves being series connected one to the other for producing a pressure fluid signal to cause said power means to reverse the direction of movement of said drill motor and said guideway in response to said drill motor and said guideway both reaching their forward limit positions.

3,880,245

EXHAUST NOISE ATTENUATING SYSTEM WITH MUFFLER FOR PNEUMATIC TOOLS

Carl G. Anderson, Jr., Utica, N.Y., assignor to Chicago Pneumatic Tool Company, New York, N.Y.

Filed Nov. 21, 1973, Ser. No. 418,033
Int. Cl. B23b *45/04*
U.S. Cl. 173—163 **5 Claims**



1. A pneumatic tool including an air driven motor comprising a rotor liner defining a rotor chamber having an air driven multiple blade rotor operating therein and having exhaust ports through the liner for the exhaust of driving air from the chamber; a housing for the tool encasing the motor having an end cap at its rear end and having a pistolgrip handle depending from its underside adapted to be held by the operator for maneuvering the tool; and a sound attenuating system through which the exhaust air passes to atmosphere comprising an annular channel around the liner into which the exhaust ports open radially, an elongated exhaust passage extending lengthwise through the handle, an exhaust air expansion chamber connecting the annular channel with an upper end of the passage that extends through the handle, a sound resonating cavity located in the cap at one side of and in parallel relation to the annular channel, a partition wall separating the annular channel from the cavity having a group of laterally extending throat ports communicating the annular channel with the cavity, and a sound muffling plug having a threaded connection with a terminal end of the exhaust passage that extends through the handle.

3,880,246

OPTIONALLY STABILIZED DRILLING TOOL, AND METHOD OF USE

Ralph J. Farris, 601 Edwin St., New Iberia, La. 70746

Division of Ser. No. 291,129, Sept. 25, 1972, Pat. No. 3,799,279. This application Dec. 3, 1973, Ser. No. 421,389
Int. Cl. E21b *7/04, 7/18*; **308** *4 A*
U.S. Cl. 175—61 **1 Claim**

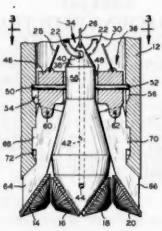
1. Method of using an optionally stabilized drilling tool comprising the steps of: engaging a tool, having a plurality of non-symetrical stabilizer means mounted rotatably thereon, adjacent a non-symetrical drill bit in a drill string; stabilizing said drill string by randomly displacing around said tool said plurality of stabilizer means by rotational drilling; and destabilizing said drill string by aligning said plurality of stabilizer means by percussive drilling with said bit.

3,880,247

REPLACEABLE DRILL BIT FOR ROTARY DRILLING OF BORE HOLES

Thomas J. Harding, 800 W. Melrose, Findlay, Ohio 45840

Filed Aug. 23, 1972, Ser. No. 283,192
Int. Cl. E21b *9/26*
U.S. Cl. 175—260 **15 Claims**



1. In a bore hole drilling system including a rotatable string of drill pipe and a retrievable drill bit the improvement comprising means for attaching the bit to the lower end of the drill pipe, said attaching means including:

a hollow cylindrical body having a radially expanding groove means in the interior wall thereof;

an extensible latching means affixed to said bit slidably engaging the groove means in the interior wall of said body; and

a wedge slidably movable in said bit for contact with said extensible latching means to effect the movement of said extensible latching means.

3,880,248

VALVE SLEEVE FOR USE IN ASSOCIATION WITH OILFIELD HYDRAULIC JAR TOOL

Leonard Mason, Edmonton, Alberta, Canada, assignor to Lee-Mason Tools Ltd., Edmonton, Alberta, Canada

Filed Apr. 16, 1974, Ser. No. 461,302
Int. Cl. E21b *1/10*
U.S. Cl. 175—297 **2 Claims**

1. In a hydraulic jarring tool comprising a telescopically related outer barrel and inner mandrel,

said barrel and mandrel forming between them a hydraulic chamber containing operating liquid,
packing elements at each end of the chamber effecting a liquid-tight seal between the barrel and mandrel,
said barrel having a valve-fitting section and a jar free-stroke section,
said mandrel carrying an annular radial shoulder member and a valve stop spaced axially from the member,
said shoulder member having an end face to provide a valve seat,
the improvement comprising:
a tubular sleeve slidably mounted on the mandrel between the stop and shoulder member,
said sleeve having first and second ends, said first end being closest to the shoulder member,

said sleeve combining with the valve-fitting section, when the sleeve is being drawn therethrough toward the jar free-stroke section on the jarring stroke, to form a narrow annular passageway between them,
said sleeve having a face at its first end whereby, when the sleeve presses against the valve seat during the jarring stroke, a liquid-tight seal is effected,
said sleeve combining with the mandrel to form therebetween an axial passageway,
said sleeve having a transverse opening at its second end to permit operating liquid to enter the axial passageway,
said sleeve having a bore for providing communication during the jarring stroke between the jar free-stroke section of the hydraulic chamber and the lower portion of the annular passageway, whereby high pressure may be transmitted to said lower portion to reduce outward belling of the adjacent portion of the sleeve.

3,880,249

JAR FOR WELL STRINGS

Edwin A. Anderson, 1104 Chimney Rock Rd., Houston, Tex. 77027

Continuation-in-part of Ser. No. 320,200, Jan. 2, 1973, abandoned. This application Mar. 12, 1974, Ser. No. 450,368
Int. Cl. E21b 1/10
U.S. Cl. 175—302 **33 Claims**

30. A jar for a well string including:
a. a housing;
b. a mandrel movable longitudinally in said housing; and
c. means on said mandrel and spaced cooperating means on said housing engageable upon nonrotational movement of said mandrel relative to said housing for selectively moving said mandrel relative to said housing and for selectively delivering an upward or a downward impact to the well string.

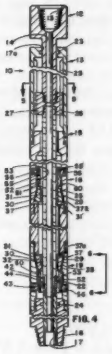


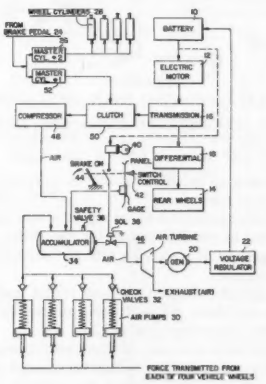
FIG. 4

3,880,250

VEHICLES WITH INCREASED ENGINE EFFICIENCY

Emidio G. Emanuele, Niagara Falls, Ontario, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Aug. 14, 1973, Ser. No. 388,142
Int. Cl. B60k 1/00
U.S. Cl. 180—65 R **1 Claim**



1. Apparatus associated with an automotive drive system of a vehicle having at least four wheels to utilize energy normally wasted therein, said system including a battery charged via a voltage regulator by a generator, an electric motor coupled to the battery and supplying power to at least some of the wheels via a transmission and differential, said system further including a hydraulic braking system wherein a separate hydraulic cylinder is disposed on each wheel and wherein a brake pedal applies hydraulic pressure via a hydraulic master cylinder to the cylinders at the various wheels, said system comprising:
an air turbine connected to the generator;

an accumulator;

a normally closed solenoid operated valve connected between an output of the accumulator and an input of the air turbine, the valve when open passing air under pressure from the accumulator to the turbine, thus charging the battery;

first means including at least one switch connected in circuit between the battery and valve to enable the valve to be opened when desired by an operator;

second means responsive to specified vehicular motions to pass air under pressure into the accumulator, said second means including air pumps operated by wheel rotation to supply air to an input of the accumulator and a normally inoperative compressor which when operative supplies air to the accumulator input;

a normally disengaged clutch disposed between the compressor and the transmission, said clutch when engaged coupling the transmission to the compressor to cause the compressor to become operative; and

means responsive to the depression of said pedal to cause said clutch to be engaged.

3,880,251

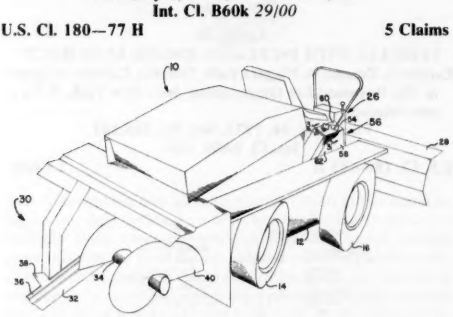
STEERING LOCK FOR A VEHICLE

James T. Clevanger, Jr., Lancaster, and Gary C. Snyder, New Holland, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed July 2, 1973, Ser. No. 375,584

Int. Cl. B60k *29/00*

U.S. Cl. 180—77 H **5 Claims**



1. Improved vehicular control apparatus comprising in combination:

A. a frame;

B. ground engaging means mounted in operative relationship with said frame;

C. drive means connected to said ground engaging means and adapted to provide power for propelling the frame over the ground at a varying rate of speed and in a selected direction;

D. control means mounted on said frame and interconnected to said drive means to control said drive means, said control means comprising

1. a control arm movable in first and second modes of operation over a predetermined range, said control arm reciprocally movable along a first path in a fore-and-aft direction for controlling the rate of speed of said vehicle in said first mode and said control arm simultaneously reciprocally movable along a second path generally perpendicular to said first path for controlling the direction of travel in said second mode,

2. means for locking said control arm in an infinite number of selected positions along said second path, and

3. interconnecting means to operably interconnect said control arm with said lock means, whereby said lock means is adapted to permit variation in said control arm's position along said first path under conditions where said control device is locked in a selected position along said second path.

3,880,252

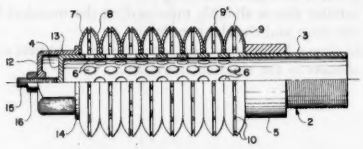
MUFFLER

John R. Mucka, Pittsburgh, Pa., assignor to H. K. Porter Company, Inc., Pittsburgh, Pa.

Division of Ser. Nos. 365,956, June 1, 1973, and Ser. No. 478,709, June 13, 1974. This application July 1, 1974, Ser. No. 484,587

Int. Cl. F01n *1/10*

U.S. Cl. 181—60 **4 Claims**



1. A muffler for suppressing the exhaust noises of internal combustion engines and air-driven machinery comprising:

a. a straight tubular body having means at one end for connecting it to the exhaust of an internal combustion or air-driven motor and having a closure at its other end, a length of the tubular body intermediate its ends being of uniform diameter and having perforations therein extending lengthwise and circumferentially of the body,

b. a series of dished annuli on the tubular body over said perforated length of the tubular body, each annulus being of concavo-convex shape with a central opening through which the tube is slidably passed, said annuli being arranged in several pairs in which the concave surfaces of the annuli of each pair are in confronting relation and the peripheral edges of the concave surfaces of the two annuli converge toward a common plane and the central areas of the outer surfaces of the annuli are in back-to-back contact, each such pair providing an attenuation chamber with opposing concave walls around the tubular body extending from the exterior of the tubular body to the periphery of the pair of annuli, said attenuation chambers and the openings in the tubular body being so disposed as to introduce gases from the tubular body into each attenuation chamber both at its mid plane and on at least one side of said mid plane,

c. at least one annulus of each pair having a plurality of projections about its edge which contact the confronting edge of the other annulus of the pair to prevent full edge-to-edge contact between the two annuli of the pair to assure clearance space for the discharge of gases from around the periphery of the chamber formed between said annuli of each pair, all of the annuli being jammed tightly together by tightening them between two abutments secured to the tubular body, the clearance space so provided opening directly into the atmosphere.

3,880,253

SPEAKER GRILLS

Gerd Kuhfus, London, Ontario, Canada, assignor to Northern Electric Company, Limited, Montreal, Quebec, Canada

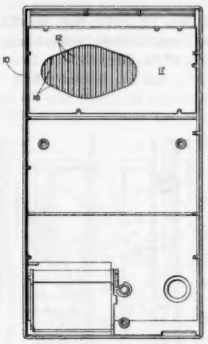
Filed June 24, 1974, Ser. No. 482,212

Int. Cl. G10k *13/00*; **H04r** *1/28*

U.S. Cl. 181—175 **3 Claims**

1. A speaker grill in a housing comprising a plurality of parallel ribs in said housing and a mask secured to the ribs on an inner surface of the housing; and an aperture in the mask at a position to correspond with a speaker position; the ribs each having a cross-section, secured normal to the longitudinal axis of the rib, in the form of a modified Z shape and including upper and lower crossbars connected by a web, the ribs separated by channels extending completely through the grill from the outside to the inside thereof, each channel of sinuous form, secured in cross-section normal to the longitudi-

nal axis of the channel, and having outer and inner portions, the channel portions offset relative to each other to thereby



substantially prevent direct view between the ribs in a direction normal to the outer surface of the grill.

3,880,254

ESCAPE BOOM

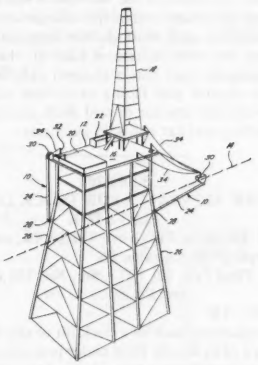
Hugh Joseph Fitzgerald, deceased, late of Austin, Tex. (by Marva Jean Fitzgerald, administratrix), and Edward James Kwadas, New Orleans, La., assignors to Resolution Engineering and Development Company, Houston, Tex.

Filed Dec. 27, 1972, Ser. No. 318,917

Claims priority, application United Kingdom, Dec. 30, 1971, 60688/71

Int. Cl. A62b *1/00*

U.S. Cl. 182—2 **10 Claims**



1. A method for providing means for escaping from an offshore, water surrounded, structure including:

pivotally mounting a boom on the structure at one end thereof,

mounting a head on the other end of the boom,

arranging the boom in an unbalanced position adjacent the structure,

utilizing the unbalance to pivot the boom away from the structure when the boom is released, and

extending at least one lifeline from the structure to the head when the boom is pivoted away from the structure.

3,880,255

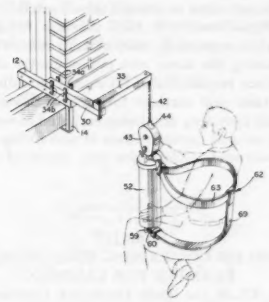
EMERGENCY FIRE ESCAPE MECHANISM

James B. Huntley, 4395 Colorado Ave. N.W., Washington, D.C. 20011

Continuation-in-part of Ser. No. 316,750, Dec. 20, 1972. This application Apr. 4, 1974, Ser. No. 458,011

Int. Cl. A62b *1/08*

U.S. Cl. 182—5 **5 Claims**



1. A portable, self-contained fire-escape mechanism, said mechanism comprising an anchoring bar capable of being mounted on a window sill or balcony of a building structure, a longitudinally slidably extendable bar mounted on said anchoring bar, a bar having means at one end thereof permitting the same to be pivoted to said extendable through an arc of 90° to 270° on the exterior of an outer vertical face of said building structure, said pivoted bar having coupled thereto a lowering assembly carrying one end of a flexible cable contained within and payable out from a storage canister, said canister being provided with harness adapted to hold and fasten the body of a person thereto, said lowering assembly being capable of controllably paying out said cable from said canister, whereby said body will be lowered from said anchoring bar at a controllable rate of descent.

3,880,256

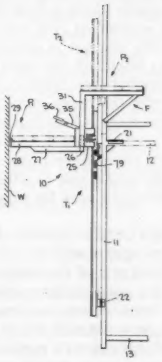
SCAFFOLDING WITH IMPROVED ELEVATOR MECHANISM

Alexander Couris, Rt. 1, Box 196, Gilbertsville, Ky. 42044

Filed Aug. 2, 1973, Ser. No. 384,957

Int. Cl. E04g *1/18*

U.S. Cl. 182—136 **9 Claims**



1. An elevator assembly for attachment to vertically extendible scaffolding sections having support legs and horizontal

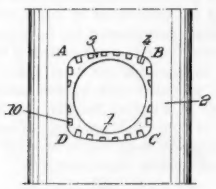
reinforcing members comprising elongated track sections positionable adjacent corresponding legs on the work side of said scaffolding, means for detachably supporting said track sections on said scaffolding, means for interconnecting adjacent track sections to continuously vertically extend with the scaffolding as the work continues upward, said track sections being substantially smooth to provide an obstruction free track, a carriage for support on each track, at least one horizontally extending arm on each carriage, a platform supported between adjacent arms to provide the elevated working space, frictional gripper means in each carriage for gripping said smooth track, cooperating frictional lift means in each carriage for raising the same and consequently elevating said plataform when required, said lift means including an operating arm to raise said carriage for upward movement of said platform, said operating arm being mounted in non-supportive relationship on said carriage when in non-lifting position and extending over said platform for easy access of effect operation.

3,880,257

ASSEMBLIES COMPRISING FOOT RUNGS, FOR EXAMPLE FOR LADDERS

Leon Gubri, 42-44, rue Emile Deschanel, Courbevoie, France (92404)

Filed July 13, 1973, Ser. No. 378,944
Int. Cl. E06c *7/08*
U.S. Cl. 182—228 **6 Claims**



1. A ladder comprising opposed uprights having pairs of opposed openings, a plurality of elongated hollow rungs, each rung having a prismatic generally rectangular external surface, as viewed in cross-section transverse to the direction of elongation thereof, and including a plurality of channels formed in and extending longitudinally along at least the upper surface of the rung, to define upstanding ribs, each rung extending through and being fixedly engaged in opposed openings of a pair, the openings being essentially the same shape and size as the said generally rectangular outer transverse cross-section of the rung received therein, the rungs contacting the edges of each of its respective openings at least in part on all four sides thereof, and at all four corners thereof, wherein on any of said four sides which include channels and ribs, ribs are provided at both corners adjacent to that side to effect said contacting at those corners, wherein each rung fits snuggly in both of its respective openings,

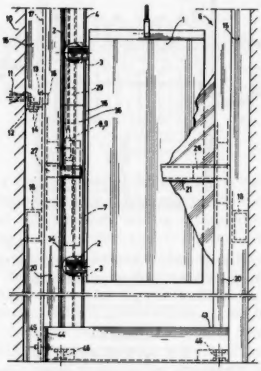
each said rung having a circular cylindrical internal surface, the center of which is coincident with the axis of the prismatic external surface, the thickness of the rung between the said internal surface and the solid thickness boundary thereof, viewed in transverse cross-section, continuously increasing from a minimum at the center of each side of the rung towards either adjacent edge of that side to a maximum at both adjacent corners of the rung, so as to provide an increased solid thickness of material at the corners of the rung relative to the thickness at the said center of each side, to resist deformation of the rungs at said corners.

3,880,258

LIFT FOR INSTALLATION AGAINST A SUBSTANTIALLY VERTICAL WALL

Jozef Johannes Theresia Rompa, 14 Bredaseweg, Terheyden, Netherlands

Filed Dec. 27, 1971, Ser. No. 221,883
Claims priority, application Netherlands, Dec. 29, 1970, 7018981; Dec. 29, 1970, 7018982
Int. Cl. B66b *9/18*
U.S. Cl. 187—2 **7 Claims**



1. A lift for installation against a substantially vertical wall, comprising a support adapted to be mounted against said wall so as to extend substantially vertically along said wall, a plurality of shaft sections each formed of interconnected peripheral elements surrounding an interior of the shaft section, means for interconnecting said shaft sections in axial alignment one above the other so as to form a continuous shaft, means for securing said shaft sections to said support, guide members within the interior of each shaft section positioned so that the aligned guide members of the successive shaft sections form a continuous guideway within the interior of said shaft, the guide members of each shaft section comprising two parallel guide beams, the cross section of each of which comprises a closed rectangular part plus a channel part facing the other beam and a channel part facing away from said other beam, a lift car within the interior of said shaft, and means movably interconnecting said car and said guideway.

3,880,259

POWER APPARATUS FOR TRUCK LOADING ELEVATOR

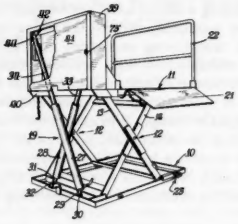
Lawrence I. Richards, Elk Grove Village, Ill., assignor to Autoquip Corporation, Chicago, Ill.

Filed Feb. 12, 1973, Ser. No. 331,641
Int. Cl. B66b *11/04*
U.S. Cl. 187—18 **7 Claims**

1. In an apparatus such as a dock lift or the like and for use with a source of hydraulic fluid under pressure, said apparatus comprising a frame having two sides and two ends, a vertically movable platform device above the frame and also having two corresponding sides and two corresponding ends, two pair of scissors means respectively connecting opposite sides of the frame and platform device, and power means at one end of the frame and connecting the frame and platform device for vertically moving the platform device with respect to the frame, the improvement comprising:

said power means comprising two hydraulic cylinders each cylinder having a closed end, a piston rod extending from the other end of the cylinder and connecting members on the closed end and the distal end of the piston rod, one of said cylinders having one member thereof pivotally

secured to the frame at one side and the second member thereof pivotally secured to the platform device at the other side, the other of said cylinders having one member thereof pivotally secured to the frame at said other side and the second member thereof pivotally secured to the platform device at said one side, each cylinder having a first hydraulic connection adjacent the closed end thereof and a second hydraulic connection adjacent the other end thereof, said power means including two hydraulic fluid conduits, one of said conduits communicating with the first connection of one cylinder and the second connec-



tion of the other cylinder to provide fluid communication therebetween, the other of said conduits communicating with the second connection of said one cylinder and the first connection of said other cylinder to provide fluid communication therebetween, whereby a load imposed on said platform at a first side thereof will push down on the hydraulic cylinder connected to said first side of the platform which hydraulic cylinder will in turn act through the respective communication to energize the other hydraulic cylinder to apply a downward pulling force on the other side of the platform.

3,880,260

TRAILER DISC BRAKE AND FRICTION PAD THEREFOR

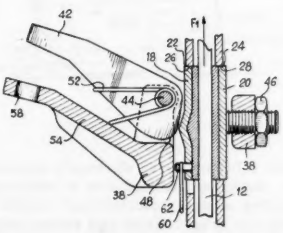
Daniel Schoenhenz, Epinay, France, assignor to Société Anonyme D.B.A., Paris, France

Filed July 29, 1974, Ser. No. 492,569

Claims priority, application France, Aug. 1, 1973, 73.28140

Int. Cl. F16d *55/228*

U.S. Cl. 188—72.9 **10 Claims**



1. A trailer disc brake in which brake applying means are associated with a torque taking member to urge at least two brake pads into frictional engagement with corresponding sides of a rotary disc, maintaining means being provided to avoid radial escape of the pads with respect to the disc axis, front and rear abutment means being provided to anchor the pads in accordance with the direction of disc rotation, wherein there is a predetermined clearance between at least one of the pads and the abutment means, the said one pad and the brake applying means having cooperating surfaces such that the travel of the brake applying means parallely to the disc axis is greater than the travel required for applying the one pad to the disc when the one pad is anchored against the front abutment means, whereas the axial travel of the brake applying means is less than the travel for applying the one pad to the disc when the one pad is anchored against the rear abutment means.

3,880,261

DISC BRAKE

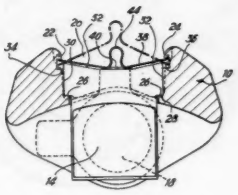
Pierre Courbot, Villiers-le-Bel, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Mar. 27, 1974, Ser. No. 455,100

Claims priority, application France, Apr. 19, 1973, 73.14283

Int. Cl. F16d *65/02*

U.S. Cl. 188—73.5 **6 Claims**



1. In a disc brake:

a disc mounted for rotation with a member to be braked;

a torque taking member mounted adjacent one side of said disc, said torque taking member defining an aperture therein defined by a pair of inner edges of said torque member;

a friction element disposed between said inner edges of said torque member and adapted to anchor thereon when a brake application is effected, said friction element being removable from said torque member through said aperture radially outwardly with respect to said disc;

abutment means on said inner edges of the torque member and on the corresponding edges of said friction element to locate the latter radially with respect to the torque member;

actuating means for urging said friction element into braking engagement with said disc when a brake application is effected; and

retention means for retaining said friction element on said torque member, said retention means including a pair of facing recesses on said inner edges, and a substantially rectilinear spring, the length of the spring being greater than the length between the bottoms of said recesses so that when the opposite ends of the rectilinear spring are installed in said recesses the spring is movable between first and second stable positions;

a first portion of said spring engaging the upper edge of said friction element when the spring is in said first stable position to urge the abutment means on the friction element and the torque member into engagement, said spring in said second position being substantially symmetrical about a plane passing through said recesses with respect to the first position to permit removal of the spring from the torque member.

3,880,262

CONTROL MEANS FOR AUXILIARY BRAKE DEVICE

Kirk Besoyan, Blythe, Calif., assignor to Auxiliary Brake Systems, Inc., Phoenix, Ariz.

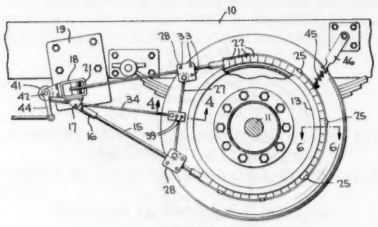
Filed Jan. 3, 1974, Ser. No. 430,571

Int. Cl. F16d *49/08*

U.S. Cl. 188—77 R **4 Claims**

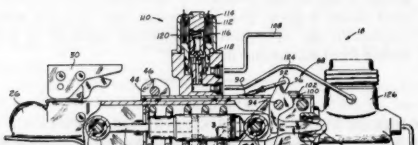
1. An auxiliary brake device for a vehicle having a frame, an axle carried by said frame, a wheel at opposite ends of said axle comprising, in combination, a sheave secured relative to

and concentric with each said wheel for rotation therewith, a flexible cable extending about said sheaves over at least 180° of each sheave circumference, said cable being movable toward and away from the bottom of each sheave groove, a plurality of friction elements carried by said cable into and out of frictional engagement with the side walls defining the groove of each said sheave, and control means for moving said cable to draw said friction elements into and out of frictional engagement with each said sheave groove side walls with an equalizing force in both a forward and reverse direction of vehicle motion, said control means comprising a first flexible cable element interconnecting at its opposite ends portions of said cable extending away from each said sheave near the



remainder of each sheave circumference, a cable drum rotatably mounted on said frame about an axis parallel to said vehicle axle, and a second flexible cable element mounted at one end to the periphery of said drum and mounted at its opposite end to said first cable element substantially midway between said interconnected cable portions, thereby the auxiliary brake may be applied upon rotation of said cable drum in one direction causing said cable portions to be moved toward one another to thereby equally draw said friction elements into frictional engagement with each said sheave groove side walls during forward and reverse directions of vehicle motion, said first flexible cable element flexing between its said ends as said second cable element is moved away from said sheave to thereby move said opposite ends toward one another.

3,880,263
SURGE BRAKE ACTUATOR
Jerome T. Ewald, and Walter J. Mizen, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.
Filed Oct. 23, 1973, Ser. No. 408,877
Int. Cl. B60t *7/20*
U.S. Cl. 188—112 **10 Claims**



1. In a control device for a tow vehicle-trailer braking system, means for activating the wheel brakes of the trailer, said means comprising:

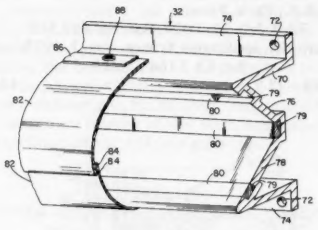
first and second telescoping members, said first telescoping member being attached to the tow vehicle and the second telescoping member being attached to the trailer;

dampening means located between said first and second telescoping members for attenuating oscillatory movement therebetween without momentarily activating the wheel brakes of the trailer;

pressure producing means fixed to one of said telescoping members for supplying said wheel brakes with an operational fluid under pressure; and

resilient means located between the other of said telescoping members and said pressure producing means for transmitting a direct axial operational input force to the pressure producing means, the space between the other of said telescoping members and pressure producing means occupied by said resilient means being greater than the length of said resilient means when the braking system is in an unoperated condition such that the resilient means is brought into engagement with said pressure producing means and said other of the telescoping members in response to relative movement produced by a deceleration in the tow vehicle with respect to the trailer sufficient to overcome said dampening means.

3,880,264
POWER SYSTEM
James L. Corkum, Enfield, Conn., assignor to Alden Self-Transit Systems Corporation, Bedford, Mass.
Division of Ser. No. 121,263, March 5, 1971, Pat. No. 3,786,762. This application Oct. 19, 1973, Ser. No. 408,070
Int. Cl. B60l *5/38*
U.S. Cl. 191—49 **5 Claims**



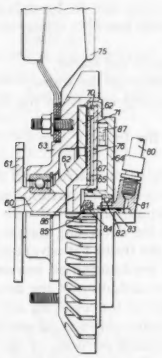
1. A power collector for an electrically powered vehicle adapted for sliding engagement with a continuous power source extending along a predetermined vehicle path and insertion into and removal from said power source at any point along the length thereof, said power source comprising a channel of electrically insulating material that has opposed surfaces that taper inwardly of the channel towards one another and a plurality of exposed electrically conductive bus bar structures extending the length of said channel parallel to one another along inner surfaces of said channel, said power collector comprising an elongated head of tapered cross-sectional configuration having two opposed outer surfaces disposed at an angle to one another and that meet at an apex, and a plurality of electrical contact structures,

at least one contact structure being exposed at each said opposed outer surface and defining a contact surface for electrical engagement with a corresponding bus bar of

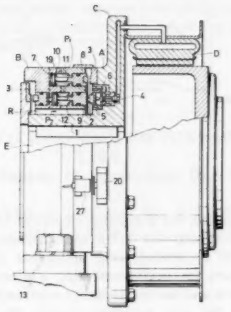
said power source when said elongated head is inserted into said channel.

3,880,265
FAN DRIVES
Arthur Ernest Henry Elmer, Painswick, England, assignor to Dynair Limited, Gloucestershire, England
Division of Ser. No. 200,454, Nov. 19, 1971, Pat. No. 3,757,914. This application June 25, 1973, Ser. No. 373,318
Int. Cl. F16d 35/00
U.S. Cl. 192—58 B 2 Claims

1. A cooling fan assembly including a rotary input drive member located at one axial end of the assembly and formed with means for attachment to a drive shaft, a viscous fluid clutch comprising two rotary elements, namely a rotary casing supported by a bearing from said input drive member and carrying a plurality of fan blades, and an internal rotary element secured to said input drive member and spaced by a small fixed clearance from the walls of said casing, wall means defining a reservoir within said casing and communicating with said clearance, means for circulating a viscous fluid between said clearance and said reservoir including a fluid scoop carried by one of the rotary elements of said fluid clutch, said scoop being movable axially to control the rate of said circulating fluid flow, adjustment means within said casing and operatively connected to said scoop for varying the rate of said circulating fluid flow and thereby the quantity of fluid within said clearance and the torsional drive through said clutch to said fan blades, a fluid operated ram located at the end of said assembly remote from said rotary input drive member, the two operative parts of said ram being connected respectively through bearings with said adjustment means and said casing, an actuating member mounted within said casing and connected to said adjustment means and to said scoop and to an operative part of said ram, a remotely positioned non-rotating thermal sensing valve element, and a non-rotating fluid connection between said thermal sensing valve element and said ram, said fluid connection being located externally of said casing.

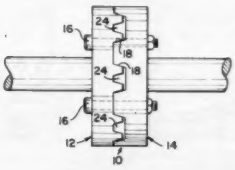


3,880,266
CLUTCH SEAL WITH FLUID OPERATED CHECK VALVE
Eisuke Sugahara, Tokyo, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan
Filed Nov. 20, 1973, Ser. No. 417,656
Claims priority, application Japan, Nov. 23, 1972, 47-117582
Int. Cl. F16d 25/00
U.S. Cl. 192—86 6 Claims



2. An apparatus according to claim 1, wherein both the sealing ends of said sealing pistons and the engaging sides of said actuating piston and said discharging piston are made of a sintered carbon impregnated with a synthetic resin.

3,880,267
COUPLING DEVICE HAVING MEANS FOR RELIEVING CIRCUMFERENTIAL STRESSES
Ronald E. Auble, Henrietta, and Wells Coleman, Brighton, both of N.Y., assignors to The Gleason Works, Rochester, N.Y.
Filed Feb. 12, 1973, Ser. No. 331,938
Int. Cl. F16d 11/00
U.S. Cl. 192—108 12 Claims



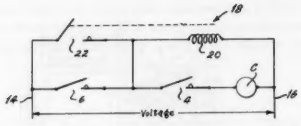
1. In a coupling device assembled from first and second clutch members which each have lug elements formed on a face thereof so that the lug elements of one clutch member can be brought into coupling contact with lug elements of the other clutch member to form a driving connection thereof, said lug elements of one clutch member being of a type in which individual lug elements are convexly curved lengthwise, with the lug elements of the other clutch member being of the type in which individual lug elements are concavely curved lengthwise, there further being a lengthwise mismatch between said convex and concave curvatures of the lug elements of said clutch members, and wherein said first clutch member has a characteristic of greater elasticity than said second clutch member, the improvement comprising

means for relieving circumferential stresses which develop between contacting lug elements of the two clutch members when one clutch members are coupled together in a driving relationship and when the clutch member is expanding at a greater rate than the other clutch member.

3,880,268
APPARATUS FOR TOTALIZING COINS

Norman J. Burzen, Pacific, Mo., assignor to I.M.M. Ventures Limited, Toronto, Ontario, Canada

Filed Mar. 4, 1974, Ser. No. 447,674
Int. Cl. G07f 5/12
U.S. Cl. 194—9 R 6 Claims

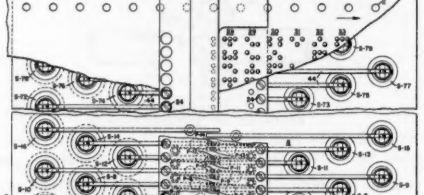


1. An apparatus for directing electrical current to a controlled device in response to the introduction of a plurality of coins into the apparatus, said apparatus comprising: coin receiving means for accommodating a plurality of coins in succession, first and second switches actuated by coins as they pass through the coin receiving means, the switches being connected in series with the controlled device, and bypass means operated by the second switch for rendering the second switch ineffective when the first coin passes through the coin receiving means so that a subsequent coin will cause the first switch to energize the controlled device.

3,880,269
BRAILLE COMMUNICATION TERMINAL

Guy P. Carbonneau, West Henrietta, N.Y., assignor to Triformation Systems, Inc., Stuart, Fla.

Filed Sept. 4, 1973, Ser. No. 394,328
Int. Cl. B41j 3/32
U.S. Cl. 197—6.1 20 Claims

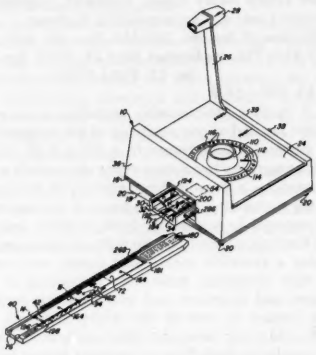


1. Braille communications apparatus which comprises:
a. means including a collinear row of embossing elements grouped in a plurality of pairs for embossing the collinearly disposed code elements in a line of braille code characters on a sheet, and
b. means coupled to each of said embossing elements and responsive to code signals representing said characters for successively operating said embossing means to emboss on each of said successive operations successive entire lines of said braille code elements until an entire line of braille code characters is formed.

3,880,270
MACHINE FOR MAKING DEBOSSED DISPLAYS AND BLANK THEREFOR

Charles H. Travis, Martinez; Harry F. Noller, Moraga, and Eugene W. Beers, Lafayette, all of Calif., assignors to Dymo Industries, Inc., Emeryville, Calif.

Filed Apr. 4, 1973, Ser. No. 347,440
Int. Cl. B41j 1/30
U.S. Cl. 197—6.4 17 Claims



1. A machine for impressing a blank of perdetermined dimensions with a series of consecutive, accurately registered debossed characters, the blank having an obverse surface in which the characters are to be debossed and an opposite reverse surface, said machine comprising:
a frame;
actuator means on the frame;
a debossing station on the frame;
character debossing means on the frame at the debossing station;
a guideway on the frame;
a carrier;
means for engaging the carrier with the guideway such that at least a portion of the carrier is guided by the guideway along a guidepath juxtaposed with the character debossing means at the debossing station;
feed means on the frame for advancing the carrier along the guidepath in predetermined increments of advancement in response to actuation of the actuator means;
means in the carrier for receiving and retaining the blank in such fixed relationship to said portion of the carrier as to locate consecutive portions of the blank in position for debossing at the debossing station, said receiving and retaining means including a receptacle in the carrier, said receptacle having a bottom surface complementary to the major portion of the reverse surface of the blank; and
the guideway and the carrier inlcude corresponding surfaces so engaged as to provide a relatively rigid anvil at the debossing station against which the blank, when located in the receptacle and against the bottom surface thereof, rests during debossing.

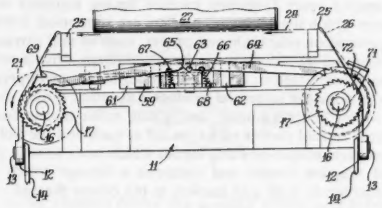
3,880,271
RIBBON FEED

Terrance J. Hebron, Arlington Heights, Ill., assignor to Victor Comptometer Corporation, Chicago, Ill.

Filed Sept. 17, 1973, Ser. No. 397,883
Int. Cl. B41j 33/56
U.S. Cl. 197—157 13 Claims

1. In a business machine printer having a printing area defined by a platen for backing paper to receive line printing, horizontal pivot means spaced forwardly from said platen, a ribbon deck pivotally supported at its front by said horizontal

pivot means and having a ribbon guide at its rear adjacent each end of said platen, a ribbon spool spindle upstanding from said deck adjacent each ribbon guide, a ribbon, a spool connected to each end of said ribbon and rotatable on a said spindle, cyclically operable feed means for winding the ribbon from one of said spools across said guide to the other of said spools, and means normally supporting the rear of said deck to present a portion of said ribbon extending between said ribbon guides in a lower inoperative position and selectively



operable to lift said portion of said ribbon to first or second upper operative positions and maintain the same therein during printing of each line, wherein said last recited means for supporting the rear of said deck comprises a cyclically operable lifting cam, and a link having a first end engaging said cam, a second pivotally mounted end and a connection intermediate said ends with said deck, whereby said cam raises said free end of said link to lift the rear of said deck to maintain said ribbon in an upper operative position during the printing portion of a machine cycle.

3,880,272

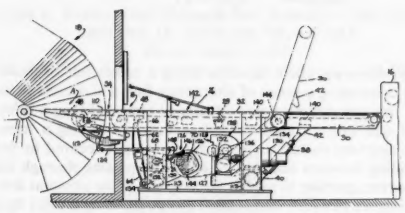
TRANSFER CONVEYOR

William F. Huck, Franklin Lakes, N.J., assignor to Bangor Punta Operations, Inc., Greenwich, Conn.

Continuation of Ser. No. 172,336, Aug. 12, 1971, abandoned. This application July 2, 1973, Ser. No. 375,411

Int. Cl. B65g *47/00*

U.S. Cl. 198—20 R **5 Claims**



2. A mechanism for transferring sheets from a sheet conveyor to a delivery station comprising transfer head, means for moving the transfer head between a starting point and the delivery station along a curved path, curved guide means for supporting the guiding and transfer head during movement between the starting point and the delivery station, said moving means being adapted to move the transfer head at the approximate speed of sheets moving along the conveyor as the transfer head is in motion between starting point and the delivery station, said guide means for guiding the transfer head through an initial upwardly curved movement to a pick-up station followed by a downwardly curved movement as the head moves from the pick-up station to the delivery station, said transfer head being adapted to engage sheets at the point of pick-up and to deliver the sheets to the delivery station, means for connecting the transfer head to a vacuum source including a valve member for selectively interrupting the vacuum applied by the transfer head, said valve having means for releasing the vacuum hold of the transfer head on a sheet when the valve is in a closed position, said valve further adapted to communicate the vacuum source when in an open position, means for urging the valve into a normally closed position, a tappet for actuating said valve between open and closed positions, said tappet being biased so that the valve retains its normally closed position, and a curved cam member for actuating the tappet in timed relation to movement of the transfer head to establish a vacuum hold of the transfer head on a sheet at the pick-up station and to break the vacuum hold at the transfer station.

3,880,273

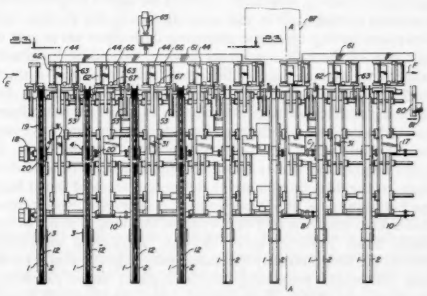
AUTOMATIC STACKING MACHINE FOR BARS AND THE LIKE

Irving Leonard Kaplan, 15 Brandywood Dr., Pepper Pike, Ohio 44124

Filed Mar. 2, 1973, Ser. No. 337,649

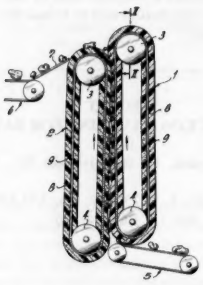
Int. Cl. B65g *47/26*

U.S. Cl. 198—34 **7 Claims**



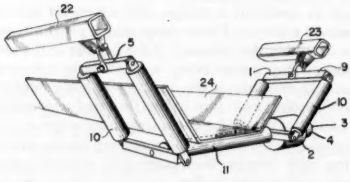
1. In a machine of the character described, the combination of first endless conveyor means for conveying a series of elongated bars in spaced relation to each other in a direction perpendicular to the direction of elongation of said bars, stationary stop means disposed adjacent the forward ends of said conveyor means and adapted for abutment by the first bar in said series to cause said first bar to stop, and each succeeding bar in the series to come into abutment with the preceding bar, whereby to close or substantially close the spacing between the bars, and provide a layer of bars in side-by-side relation, means for selecting a predetermined number of bars in the layer to constitute a charge, said means for selecting a predetermined number of bars comprising a proximity sensor means for detecting the presence of the last bar in the charge, said stationary stop means being immovable by pressure exerted by said layer of bars in the direction of movement of said bars, second endless conveyor means disposed downstream of said first conveyor means for conveying said charge away from said first conveyor means, orbitally moving means for bodily transferring said charge from said first endless conveyor means onto said second endless conveyor means, means responsive to the means for selecting a predetermined number of bars for actuating said orbitally moving means, and second stop means disposed downstream of said stationary stop means and for abutment by said charge to cause any remaining spacing between the bars of the charge to be fully closed.

3,880,274
COVER BELT CONVEYOR
Gert Bechtloff, Wilhelmshaven, and Reinhold Szonn, Lemforde, both of Germany, assignors to Gert Bechtloff
Filed July 31, 1973, Ser. No. 384,239
Claims priority, application Germany, July 31, 1972, 2237689
Int. Cl. B65g 15/14
U.S. Cl. 198—165 34 Claims



1. In a cover belt conveyor assembly of two endless belt conveyors running, in at least a part of the conveying distance, in mutual contact and in the same direction, the endless belt conveyors having direction changing deflection areas and at least one of the belt conveyors having, extending longitudinally of its surface facing the other belt conveyor, a thick resiliently deformable layer of a plastic foam material, for enclosing articles to be conveyed, the layer of a plastic foam material having longitudinal edges extending in the conveying direction and being stressed, transversely of its thickness, in both compression and tension, on opposite sides of a neutral plane, at the direction changing deflection areas of the at least one belt conveyor, the improvement comprising, in combination, said at least one belt conveyor, in the neutral plane of the plastic foam material layer thereon, projecting outwardly beyond the longitudinally extending side edges of said layer to form outwardly projecting lateral support strips extending longitudinally of the conveying direction; and support means engaging said lateral support strips at least in the direction changing deflection areas of said at least one belt conveyor.

3,880,275
TROUGH BELT CONVEYOR
Hans Fischer, In der Rosenau 15, D 5 Cologne-Zundorf, and Heinrich Schindler, Geraer Platz 7, D 5 Cologne 80, both of Germany
Filed Apr. 20, 1973, Ser. No. 353,066
Int. Cl. B65g 15/08
U.S. Cl. 198—192 R 7 Claims



1. In a trough belt conveyor, a U-shaped carrier having supports between which the U-shaped carrier is supported, and a belt supported on said U-shaped carrier, said U-shaped carrier comprising

roller means including carrier roller and side roller means, drive motor means connected to said carrier roller means and operable to drive the same and producing a reaction torque due to motor counter-torque,

and said side roller means pivotally connected to said carrier roller means at each end of said carrier roller means thereof for supporting said carrier roller means,

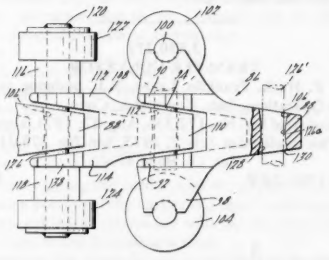
said roller means including reaction torque-resisting means for taking up said reaction torque in cooperation with said belt in contacting relation therewith.

7. In a trough belt conveyor, in combination

two spaced apart U-shaped carriers having supports between which the U-shaped carriers are supported, a belt supported on said U-shaped carrier, each of said carriers comprising intermediate carrier roller means, drive motor means connected to said carrier roller means and operable to drive the same and produce a reaction torque due to motor counter-torque, and a side roller means connected to said carrier roller means at each end thereof,

and reaction torque-resisting means which serve to take up said reaction torque and comprise a linkage which is connected to both said carriers at the center thereof.

3,880,276
CONVEYOR CHAIN
George Howard Willett, III, 807 Harcourt, Grosse Pointe Park, Mich. 48230
Filed July 9, 1973, Ser. No. 377,799
Int. Cl. B65g 17/06
U.S. Cl. 198—193 10 Claims



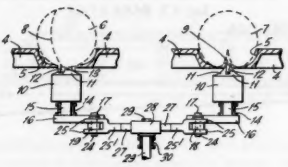
1. A conveyor chain movable along a center line of movement comprising a series of alternating first and second links, each link comprising a pair of spaced arms defining a bifurcated end and an oppositely projecting end having a transverse aperture therethrough, a transverse pin secured to and extending between said spaced arms and passing through the transverse aperture in said projecting end of an adjacent link, the distance between said arms at any point being greater than the width of said projecting end of the adjacent link at that point and the aperture in said projecting end being larger than said pin for permitting substantial relative tilting motion between said links about each of two mutually perpendicular axes, a first plurality of pairs of rollers individual to said first links, a second plurality of pairs of rollers individual to said second links, the rotational axis of each roller in said first plurality of rollers being substantially perpendicular to the rotational axis of each roller in said second plurality of rollers, the axis of rotation of each roller in said first plurality of pairs of rollers being substantially coaxial with one of said mutually perpendicular axes at the one of said first links individual thereto, the axis of rotation of each roller of said second plurality of pairs of rollers substantially intersecting one of said mutually perpendicular axes at the one of said second links individual thereto, said mutually perpendicular axes being substantially intersecting.

3,880,277

ALIGNING DEVICE FOR A PITTING AND HALVING MACHINE FOR PEACHES AND THE LIKE

Giordano Tomelleri, Verona, Italy, assignor to FMC Corporation, San Jose, Calif.

Filed Jan. 3, 1973, Ser. No. 320,692
Claims priority, application Italy, Apr. 26, 1972, 84934/72
Int. Cl. B65g 47/24
U.S. Cl. 198—260 4 Claims



1. An aligning device for a peach pitting and halving machine, said device being of the type comprising a conveyor having apertured peach receiving cups and apparatus for aligning peach indents through the cup apertures;

the improvement wherein said aligning apparatus comprises:

an articulated parallelogram frame having spaced cross bars and upstream and downstream side rods pivotally connected to adjacent ends of said cross bars, respectively, means for pivotally supporting said cross bars, drive means for oscillating said frame; and,

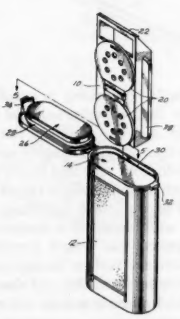
peach indent aligning means disposed adjacent each side rod, said aligning means comprising a base, bearing means for pivotally mounting said base on a support member, a stirrup projecting from said base, means slidably connecting said stirrup to its associated side rod, and a peach indent aligning member on the upper end of said base; said aligning members each oscillating to orient a peach carried in a conveyor cup in response to oscillation of said frame by said drive means.

3,880,278

CARRYING CASE AND CARTRIDGE FOR CONTACT LENSES

Frank E. Brown, 1842 Emerald Ter., Glendale, Calif. 91201

Filed Oct. 18, 1973, Ser. No. 407,543
Int. Cl. A45c 11/04
U.S. Cl. 206—5.1 24 Claims



1. Apparatus for carrying contact lenses which are generally planar in shape, the apparatus comprising

a fluid-tight carrying case having a hollow interior of elongated cross-sectional configuration defining a long dimension and s short dimension,

a lens-carrying cartridge shaped to fit into the hollow interior of the carrying case, the cartridge being separable from the case to be removably disposed in the hollow interior thereof,

the cartridge including receptacle means for containing said planar contact lenses to hold the lenses submerged in a fluid disposed in the interior of the case,

the receptacle means being arranged on the cartridge so that the plane of each lens contained therein lies substantially parallel to the long dimension of the case when the cartridge is disposed in the interior of the case,

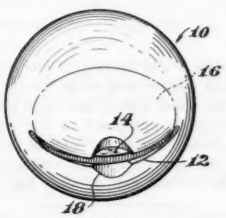
the case including closure means, and a lid of elongated configuration hinged to an end of the case, the lid having an elongated seal and closure means thereon, the seal providing a fluid-tight closure for the top of the case when the two closure means are engaged.

3,880,279

THROW-TRINKET ENCASEMENT

Charles L. Gambel, 3500 Monticello Ave., New Orleans, La. 70118

Filed Nov. 16, 1972, Ser. No. 307,205
Int. Cl. A45c 11/28
U.S. Cl. 206—8 5 Claims



1. A spherically shaped throw-trinket encasement for use in parades or similar events where it is desirable to shower coin-like objects on the attendant crowd without causing bodily injury such as lacerations due to sharp corners or edges, and for allowing the coin-like objects to be retrieved by the intended recipients with ease and reduced risk of injury,

said spherically shaped encasement having a central cavity therein with upper and lower internal parallel surfaces disposed apart an adequate distance to provide a friction fit with upper and lower surfaces of a coin which may be positioned within said cavity so as to retain said coin when said encasement is thrown and to prevent it from separating from said encasement during flight, an access slot on the surface of said encasement providing an entrance to said cavity, and having dimensions sufficient to allow said coin to be positioned within said cavity and to be removed therefrom by the intended recipient.

3,880,280

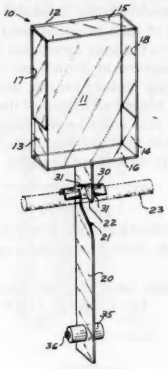
DISPLAY DEVICE FOR GARMENT RACKS

David B. Fyvolent, 3830 Central Ave., St. Petersburg, Fla. 33711

Filed July 11, 1973, Ser. No. 378,338
Int. Cl. B65d 65/16, 75/58
U.S. Cl. 206—44.12 5 Claims

1. A display unit for providing additional space for the display of material above merchandise mounted on a rod, comprising an upright standard having means intermediate its top and bottom ends to releasably mount it on a merchandise supporting rod, a display receptacle mounted on the upper end of said standard and located above the merchandise hung on said rod when said standard is mounted on said rod, and a weighted member on the standard spaced below said mounting means and having a weight greater than the combined

weight of said display receptacle and the articles to be displayed therein, said upright standard being composed of an elongated rigid plate arranged with respect to said display receptacle so as to be disposed at right an les to the merchandise rod when the unit is mounted on the latter, said mounting means constituting a hook-shaped member formed in said



elongated plate by a slot opening in one longitudinal edge thereof, and said display receptacle having a bottom wall connected to the upper end of said rigid plate, the line of connection thereof being located so that said bottom wall projects equal distances from the sides of said plate, the upper end of said slot opening and said weighing member being aligned with the central part of such line of connection.

3,880,281

DENTAL PRODUCTS

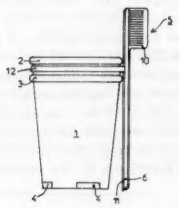
Andre Taddei, 28 Bd Georges Clemenceau, Arles, France

Filed May 19, 1972, Ser. No. 248,134

Claims priority, application France, Feb. 15, 1972, 72.05818

Int. Cl. B65d *79/00*; **A45d** *44/00*

U.S. Cl. 206—217 **10 Claims**



1. A disposable and dispensable dental kit, comprising:
a. a cup,
b. a pair of spaced apart peripheral bosses formed on the cup near the top thereof, the space between the bosses defining a gap,
c. at least two opposed recesses formed in the side wall at the bottom of the cup, the recesses being adapted to be gripped by the jaws of a distributor of an automatic dispensing machine,
d. a toothbrush assembly including a plurality of rows of bristles,
e. a quantity of dentifrice disposed on the bristles,
f. an enclosure substantially conforming to the shape of and enclosing the toothbrush assembly, the enclosure including a cover and a plate, and
g. a ring formed with the plate, the ring being dimensioned such that it at least partially surrounds the cup, the ring being inserted into the gap to render the assembly detachably secured to the cup.

3,880,282

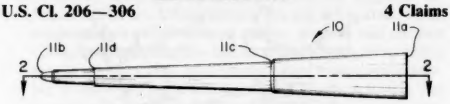
PROBE SHEATH AND PROCESS OF MAKING SAME

John R. Naumann, 347 North 5th East, Brigham City, Utah 84302

Filed Jan. 12, 1973, Ser. No. 322,966

Int. Cl. B65d *85/08*

U.S. Cl. 206—306 **4 Claims**



1. A disposable sheath for a temperature sensing probe, said sheath comprising
a one-piece, tapered, hollow body having
a rigid wall;
an enlarged open end;
a substantially rigid, closed small end;
the wall thickness at said enlarged open end being sufficiently thick to allow handling of the sheath without deformation of the enlarged open end; and
the wall thickness at the closed small end being smaller than the wall thickness at the enlarged open end, whereby rapid heat transfer is obtained through the wall at the closed small end.

3,880,283

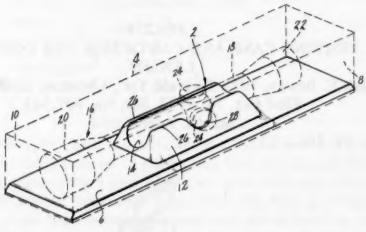
PACKAGE FOR TELESCOPIC GUNSIGHTS

Danny F. Flaherty, and Donald R. Payton, both of El Paso, Tex., assignors to W. R. Weaver Company, El Paso, Tex.

Filed Dec. 17, 1973, Ser. No. 425,361

Int. Cl. B65d *85/38*, *5/50*

U.S. Cl. 206—316 **2 Claims**



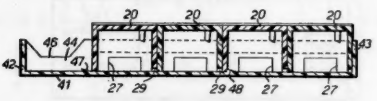
1. A package assembly comprising in combination:
a. a box having top, bottom, side, and end walls;
b. a tray in said box, said tray having a flat, low lying base portion having edges snugly engaging said side and end walls of said box to hold said tray firmly in place in said box, said tray further comprising a raised portion formed centrally on said base portion, said raised portion being of limited extent with respect to a longitudinal dimension of said base portion, said raised portion including an upwardly open concave surface having upwardly extending side walls forming a cradle, and there being an upwardly open notch formed in at least one of said side walls of said raised portion; and
c. an optical gunsight of the type having a barrel and windage and elevation adjustment turrets, said barrel being positioned upon said cradle with one of said windage and elevation turrets being positioned in said notch, whereby said gunsight is held against both lateral and longitudinal movement with respect to said tray.

3,880,284

BLADE UNIT RETAINING CASINGS AND STORAGE TRAY

Edward E. Pomfret, Newbury, England, assignor to The Gillette Company, Boston, Mass.

Filed Feb. 21, 1973, Ser. No. 334,415
Claims priority, application United Kingdom, Feb. 22, 1972, 8103/72
Int. Cl. A45c *11/00*
U.S. Cl. 206—354 15 Claims



1. The combination of a plurality of individual protective safety razor head unit casings and a tray for storing said plurality of the said casings in side-by-side relationship,

each said casing having a single safety razor head unit therein, each said head unit incorporating at least one blade and a head member to which the blade is permanently secured and which provides a guard surface, said head unit being detachably engageable with a safety razor handle, each said casing defining a single chamber in which a single head unit is received, structure in said casing for retaining said head unit therein against accidental removal in such a manner that the cutting edge of said blade is protected against damage and wherein said head unit is engageable by the said handle while said head unit is still within said chamber, each said head unit when engaged with the handle being withdrawable from its casing by means of the handle,

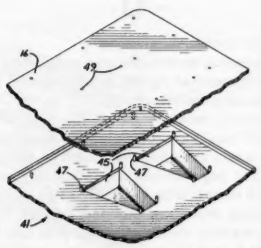
said tray including resilient securing structure constructed to secure each individual casing in said tray in aligned side-by-side relationship with another casing secured in said tray.

3,880,285

IMPLEMENT HOLDER AND METHOD OF MAKING SAME

Joseph E. March, Chicago, Ill., assignor to Platt Luggage, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 128,878, March 29, 1971, abandoned. This application Mar. 19, 1973, Ser. No. 342,846
Int. Cl. B65d *85/54*
U.S. Cl. 206—373 9 Claims



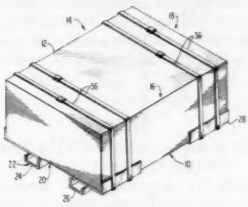
1. A holder for tools, articles or implements comprising a wall having a plurality of permanently formed cavities therein for receiving an implement, said cavities having at least one open end through which a tool, article or implement may be inserted, and a backing, said wall having a plurality of lugs affixed to the surface of said wall, said backing having a plurality of holes formed therein, said holes being in mating relationship with said lugs, said backing being located in face-to-face relationship with said wall with said lugs extending into said mating holes whereby said backing is secured to said wall so as to provide, in combination with said wall, a plurality of pockets for receiving tools, articles or implements.

3,880,286

PALLET PACKAGING

Hans F. Wegener, Michigan City, Ind., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed June 19, 1973, Ser. No. 371,364
Int. Cl. B65d *19/02, 19/36, 19/40*
U.S. Cl. 206—386 14 Claims



1. Pallet member structure, comprising

a base member,

a deck member having a load-receiving surface,

a spport member extending in a direction transverse to the load-receiving surface and joining the deck member to the base member,

the base member opposing and being spaced from the deck member, and

compression-resisting means interposed between the base member and the deck member,

the compression-resisting means including a sprial coil,

the coil having a plurality of wraps and having an axis,

the wraps being spaced from one another in a plane parallel to the load-receiving surface,

the coil axis extending transversely to the load-receiving surface, and wherein the pallet member structure further includes

opposed, spaced-apart coil-retaining surfaces extending transversely to the load-receiving surface,

the coil being resilient in a direction transverse to the coil axis and being rigid in a direction along the coil axis,

the coil being held in position against movement in a plane parallel to the base and deck members solely by resilient pressure of the coil tending to unwrap the coil against the coil-retaining surfaces.

3,880,287

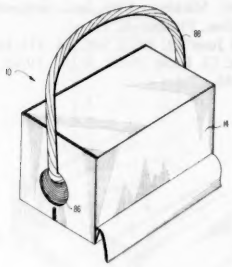
CONTAINER FOR DISPENSING ROLLED MATERIAL

Howard G. Loeffelman, Wyckoff, N.J., assignor to Flexwrap Corporation, Ridgewood, N.J.

Filed Sept. 17, 1973, Ser. No. 397,616
Int. Cl. B65d *5/00*
U.S. Cl. 206—397 10 Claims

1. A container for dispensing rolled material comprising a box having opposed side walls and end walls interconnecting said side walls at respective opposite ends of said box, said box having a bottom wall, a cover for said box spaced from said bottom wall and providing for access into said box, said bottom wall, said cover, and said side walls defining a box generally rectangular in cross section, each of said end walls having an aperture therethrough in general endwise registry with the aperture through the opposite end wall, means for normally closing said end wall apertures with said closing means being removable from the respective apertures to open the same, rolled material in said box and having an axially extending passage registrable with said end wall apertures, a flexible line extending through the end apertures of said box and through

the axial passage of said rolled material after removal of said end wall closing means and forming a part of a closed loop for hanging and supporting both the box and said rolled material independently of one another and from a support external to



the container, and a flap formed along the lower edge of one of said side walls and being pivotally carried thereby for movement to an open position defining an opening between said flap and said one side wall for dispensing rolled maerial through said opening.

3,880,288

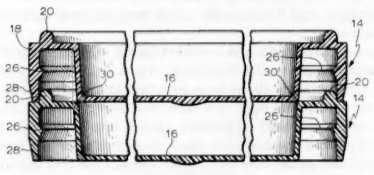
CONTAINER AND LID

Carl T. Hunter, Milwaukee, Wis., assignor to Beatrice Foods Co., Chicago, Ill.

Filed Apr. 23, 1973, Ser. No. 353,697

Int. Cl. B65d *43/10*

U.S. Cl. 206—508 **4 Claims**



1. A flexible cover for application to a container having a body portion extending upwardly from a base portion and having a circular top opening with a top rim of inverted generally U-shaped cross-section, said cover comprising a planar central portion having a generally circular circumference, an annular rim portion of an inverted generally U-shaped configuration having an inner leg portion formed integrally with said circumference of said central portion, a bight portion carrying an annular indexing rib for positively locating a similar cover stacked on said cover and having an outer leg portion terminating in a plane approximately co-planar with said planar central portion and carrying on the interior surface thereof a circumferential bead for inter-locking with said container rim to releasably retain said cover and container in assembled relation and with the exterior surface of said outer leg being tapered in thickness toward said interior surface of said outer leg commencing at a predetermined point below the juncture of said bight and outer leg portion for facilitating vertical stacking of said flexible covers, and said planar central portion having a diameter greater than the diameter of the interior space which spans said annular rim at said bight portion.

3,880,289

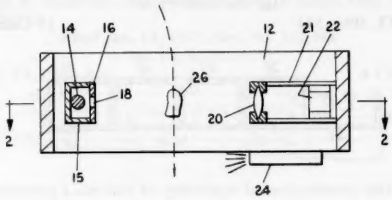
SORTING FIELD CORN FROM SWEET CORN

Milton Weldon Gray, Grand Rapids, Mich., assignor to Sortex Company of North America, Inc., Lowell, Mich.

Filed Dec. 14, 1973, Ser. No. 424,640

Int. Cl. B07c *5/342*

U.S. Cl. 209—111.7 **6 Claims**



1. A method for sorting field corn from sweet corn in a mixture of the sweet corn and field corn, the method comprising the steps of:

passing the kernels in the mixture seriatim through a viewing zone;

illuminating the kernels from one side of the viewing zone to produce a shadow pattern of at least two areas of light attenuation on an opposite side of the viewing zone;

detecting each of the areas of each kernel shadow pattern separately as it passes through the viewing zone; and

sorting the kernels according to the relative size of the areas of the shadow pattern thus produced.

3,880,290

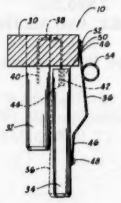
NECKTIE HOLDER

Edward Hughes, 819 Wood, Wichita, Kans. 67212

Filed Oct. 29, 1973, Ser. No. 410,543

Int. Cl. A47f *7/12*

U.S. Cl. 211—13 **3 Claims**



1. A necktie holder, comprising:

a. a base member mountable on a supporting surface,

b. a first peg member rigidly secured to said base member and extending therefrom,

c. peg mounting means,

d. a second peg member movably mounted in one end portion in said mounting means and on said base member, said second peg member normally being generally parallel to and closely adjacent to said first peg member,

e. said means mounting said second peg member has a wirelike member rigidly mounted with said base member in one end portion and having its opposite end portion extending from said base member, and a socket in said first-named end portion of said second peg member to receive said opposite end portion of said wire-like member.

f. a generally U-shaped wire-like resilient spring member having its adjacent end portions rigidly secured to said base member and having its curved end slidably engaged with a mid portion of said second peg member to resiliently urge said second peg member into contact with said first peg member.

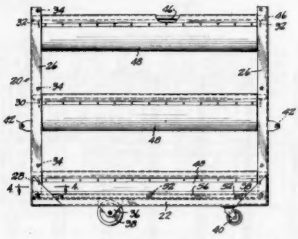
said necktie holder being constructed and adapted to receive and hold a necktie or the like in looped relation between said first peg member and said second peg member and retain such necktie or the like in place therebetween for storage.

3,880,291

GREEN TIRE CARRIER

Rowland L. Sylvester, 718 S. Chapin St., South Bend, Ind. 46621

Filed Feb. 19, 1971, Ser. No. 116,929
Int. Cl. A47f 7/04
U.S. Cl. 211—24 8 Claims



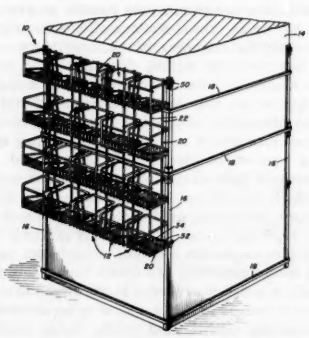
1. A green tire carrier comprising
a wheel supported rigid frame having a base portion and superstructure.
sling supports carried by said frame at three levels thereof, tire supporting slings carried by said sling supports,
said uppermost sling supports being located at an elevation above the reach of a workman of average height, and
a step member carried by said frame at one side thereof below the level of and substantially parallel to the sling supports of the lowermost slings and adapted to support a workman in position to apply tires to and remove tires from the uppermost sling means.

3,880,292

MERCHANDISE DISPLAY FOR INSTALLATION ON BUILDING COLUMNS

Harry E. Kitchen, 7910 Woodmont Ave., Bethesda, Md. 20014

Filed July 2, 1973, Ser. No. 375,516
Int. Cl. A47f 5/08
U.S. Cl. 211—112 19 Claims



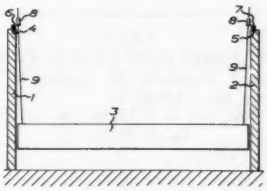
1. A merchandise display in combination with a column of polygonal cross-section defining planar faces with opposed corner forming edges, a plurality of display modules arranged across a face of the column between the opposed vertical edges thereof, each module including a plurality of merchandise receiving receptacles, the receptacles of the respective modules being horizontally aligned in vertically spaced rows, a tension-able strap encircling said column immediately below the upper row of receptacles, each of the receptacles in the upper row having a spacer affixed thereto, each spacer including a strap receiving seat therein receiving the tensioned strap therethrough, said strap receiving seats of the spacers being spaced outward from the display receiving face of the column whereby the column encircling strap, between the opposed vertical edges of the column face receiving the display, assumes a generally arcuate configuration, said spacers being of a length relative to each other so as to effect an angular change in direction of the strap as it passes through the strap receiving seats, the strap receiving seats of the spacers being positioned progressively greater distances outward from the column face from the display modules at the opposed vertical edges of the column to the module of modules at the center thereof.

3,880,293

APPARATUS FOR LIFTING AND LATERAL SHIFTING OF HEAVY CONSTRUCTIONS

Nils Harald Ahlgren, 22 Skyttevagen, 133 00 Saltsjobaden, Sweden

Filed Sept. 27, 1973, Ser. No. 401,247
Claims priority, application Sweden, Oct. 2, 1972, 2685/72
Int. Cl. B66c 17/00
U.S. Cl. 212—11 6 Claims



1. Apparatus for the lifting and lateral shifting of heavy structures and similar loads, comprising:
two essentially parallel and substantially horiziontal tracks, one on each side and at a greater height than the load, each track resting on a respective support,
said tracks having mountings for hydraulic lifting jacks adapted for lifting said load, each of said lifting jacks being arranged to take its lifting load in eccentric relation to its respective track and to transfer said load to its respective track-carried mounting;
said mountings being adapted to be slidably shifted along their respective tracks while carrying the eccentric force exerted thereon by the load which is supported by said lifting jacks;
where each of said lifting jacks is arranged with a lifting element between it and said load, and said lifting element is passed through said lifting jack and moves through said lifting jack during a lifting operation;
each of said mountings for said lifting jacks being adapted to move laterally along its respective track;
and additional jack means adapted to cause said mountings to move laterally along their respective tracks.

3,880,294

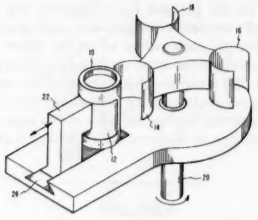
ARTICLE EXCHANGING GRAPPLES

Paul J. Arseneault, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 30, 1973, Ser. No. 420,507
Int. Cl. B65g 37/00
U.S. Cl. 214—1 B 9 Claims

1. Article exchanging grapples for exchanging articles between a hold grapple and a fetch grapple wherein the roles of

the grapples are interchangeable and each grapple comprises: fingers for gripping the surface of an article being held, said fingers being spring loaded so that the normal separation between fingers, when not biased by an article held by the fingers, is less than the width of the article to be exchanged; the tips of the fingers being shaped to provide an open space



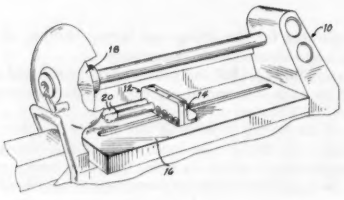
between the surface of the article held and the tip of the fingers of the holding grapple, whereby in an exchange operation the fetch grapple fingers will move along the surface of the article as the grapples are moved together until the fetch grapple fingers enter said open space and penetrate between the article and the fingers of the holding grapple.

3,880,295

VACUUM GRIPPER DEVICE FOR SLICING MACHINE

Ihor Wyslotsky, Hazelcrest, Ill., assignor to Thermoplastic Engineering, Inc., Chicago, Ill.

Filed Nov. 8, 1973, Ser. No. 413,797
Int. Cl. B23q *5/22*
U.S. Cl. 214—1.5 **5 Claims**



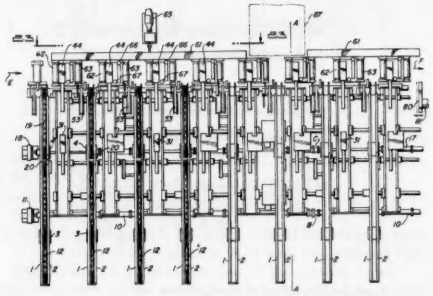
1. A product gripping device for incorporation as a pusher in a product slicing machine of the type in which a product is advanced on a supporting surface to a slicing device, said gripping device comprising a base member in the form of a plate of relatively rigid material having a face adapted to be disposed in a generally vertical plane on the sliding machine and having one or more vacuum cup formations in said face, each said vacuum cup formation comprising at least one continuous groove which opens on said face and which is defined by at least one rib formation spaced inwardly of the outer perimeter of said groove, said rib having a relatively sharp projecting edge adapted to bite into the product so as to form a closed chamber when a face of a product to be sliced is pressed against the same, said base member having means forming a plurality of passageways into said chamber for connecting said chamber to a vacuum supply source and a valve forming mechanism which is normally closed and which has means operable by pressure engagement to open the valve for applying vacuum so as to exhaust the associated chamber and hold the product face pressed against said vacuum cup formation.

3,880,296

AUTOMATIC STACKING MACHINE FOR BARS AND THE LIKE

Irving Leonard Kaplan, 15 Brandywood Dr., Pepper Pike, Ohio 44124

Division of Ser. No. 337,649, March 2, 1973. This application Dec. 27, 1973, Ser. No. 428,925
Int. Cl. B65g *57/00*
U.S. Cl. 214—6 DK **3 Claims**

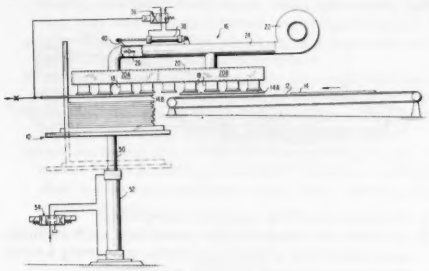


1. In a machine of the character described, the combination of first conveyor means for conveying a series of elongated articles in spaced ralation to each other in a direction perpendicular to the direction of elongation of said bars, stationary stop means disposed adjacent the forward ends of said conveyor means and adapted for abutment by the first bar in said series to cause said first bar to stop, and each succeeding bar in the series to come into abutment with the preceding bar, whereby to close or substantially close the spacing between the bars, and provide a layer of bars in side-by-side relation constituting a charge, said stationary stop means being immovable by pressure exerted by said charge in the direction of movement of said bars, second conveyor means disposed downstream of said first conveyor means, for conveying said charge away from said first conveyor means, means for bodily transferring said charge from said first conveyor means onto said second conveyor means, said transfer means comprising carriages having an orbital movement in which the charge is lifted from said first conveyor means, moved forwardly toward said second conveyor means, deposited onto said second conveyor means, and then returned to their initial position, second stop means disposed downstream of said first stop means and adapted for abutment by the charge moved by said second conveyor means to cause any remaining spacing between the bars of the charge to be fully closed, third stop means disposed downstream of said second stop means and against which said charge is positioned by said second conveyor means, means disposed downstream of said third stop means for receiving successive charges of said bars in superimposed relation to provide a bundle of said bars, said charge-receiving means consisting of a cradle having rolls for moving said bundle in a direction normal to the direction in which the charges were moved in the course of being deposited in said charge-receiving means, said cradle being provided with spaced sets of upright side rolls defining the width of the bundle, one of said sets being adjustable relatively to the other to vary the space between said sets and therefore the width of the bundle, and second transfer means for bodily transferring said charge from said second conveyor means into said chargereceiving means.

3,880,297
SHEET STACKING APPARATUS

John K. Martin, Monterrey, Mexico, assignor to Fabricacion De Maquinas, Monterrey, Mexico

Filed Mar. 13, 1974, Ser. No. 450,770
Int. Cl. B65h *29/24*
U.S. Cl. 214—6 H **5 Claims**

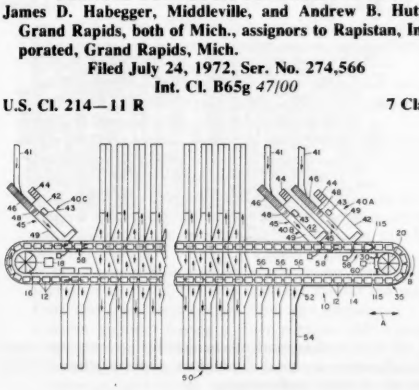


1. A sheet stacking apparatus comprising in combination:
a stack receiving means;
conveying means for conveying sheets one at a time from a remote point to a station adjacent said receiving means;
a manifold having a plurality of nozzles on the under surface thereof, positioned to overlie at least a sheet length of said conveying means as well as at least a portion of said stack receiving means, said nozzles being arranged to direct fluid under pressure from said manifold along the upper surface of sheets on said conveyor in order to elevate sheets from said conveyor toward said nozzles and maintain them in closely spaced but non-contacting relation to said nozzles, said nozzles lying in a common plane which is inclined to the horizontal with that end remote from said stack receiving means at the highest elevation so that sheets suspended beneath said nozzles will slide downhill toward said receiving means;
means for supplying fluid under pressure to said manifold; and
means for momentarily cutting off the flow of air to selected ones of said nozzles positioned over said receiving means to permit sheets to drop vertically on to said stack receiving means.

3,880,298
SORTING CONVEYOR CONTROL SYSTEM

James D. Habegger, Middleville, and Andrew B. Huttula, Grand Rapids, both of Mich., assignors to Rapistan, Incorporated, Grand Rapids, Mich.

Filed July 24, 1972, Ser. No. 274,566
Int. Cl. B65g *47/00*
U.S. Cl. 214—11 R **7 Claims**

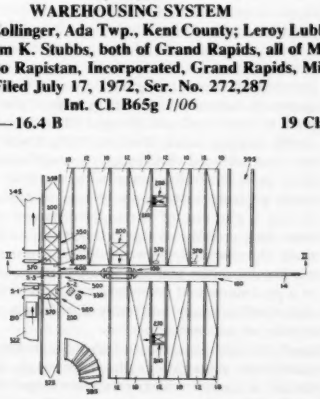


1. A system for sorting articles inducted onto trays of a conveyor which pass a plurality of individual discharge chutes positioned adjacent the conveyor by diverting articles from preselected trays when in alignment with desired discharge chutes, said system comprising:
a conveyor segmented into a plurality of discharge zones along its length, wherein each discharge zone includes a plurality of alternately spaced first and second discharge locations, said conveyor including a plurality of trays and also including a conveyor drive member for transporting said trays along said conveyor and wherein means are provided for detecting changes in at least one dimension of said conveyor drive member which is subject to change during use;
a plurality of uniquely identified discharge chutes positioned along said conveyor in alignment with said plurality of discharge locations;
a single set of sensors for providing timing signals, said set comprising a plurality of spaced tray detectors each positioned at a reference location along a single segment of the conveyor and spaced a predetermined distance from an adjacent sensor to detect trays passing thereby, means coupling each detector with a plurality of discharge locations of one of said alternately spaced first and second discharge locations such that each alternate discharge location has a plurality of associated detectors;
means for providing article destination information which identifies at least one of said uniquely identified discharge chutes for each tray having an article inducted thereon; control means coupled to said tray detectors and to said providing means and responsive to signals from said tray detectors for periodically generating first and second divert signals in response to the detection of a tray passing first and second detectors, respectively, of said set for simultaneously diverting articles from article carrying trays when in alignment with correspondingly identified discharge chutes at first and second discharge locations in preselected discharge zones at the time said first and second detectors, respectively, are actuated by said tray, and means for applying signals representative of detected dimension changes to said control means to selectively change the time of diverting of articles by developing said first and second divert signals upon detection of a tray by different detectors of said set to compensate for dimension variations of said drive member; and
divert means positioned at each discharge location and coupled to said control means, said divert means responsive to divert signals from said control means to divert an article from a tray at said discharge location onto a discharge chute.

3,880,299
WAREHOUSING SYSTEM

Howard A. Zollinger, Ada Twp., Kent County; Leroy Lubbers, and William K. Stubbs, both of Grand Rapids, all of Mich., assignors to Rapistan, Incorporated, Grand Rapids, Mich.

Filed July 17, 1972, Ser. No. 272,287
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 B **19 Claims**



1. In a warehousing system having a transverse aisle and a plurality of access aisles, an array of storage bins for receiving

and storing unit loads, the storage bins being located adjacent the access aisles which communicate with the transverse aisles; materials-handing apparatus comprising: a plurality of mobile transfer vehicles each including load transfer means thereon and further including control means thereon for controlling the motion of said vehicle in an access aisle and for controlling said load transfer means thereon in transferring unit loads into or out of preselected storage bins adjacent said access aisle, and a trans-aisle vehicle movable along the transverse aisle for carrying a mobile transfer vehicle thereon and for discharging said mobile transfer vehicle at any desired one of said access aisles, said trans-aisle vehicle including means thereon for programming said control means on said mobile transfer vehicle when said mobile transfer vehicle is positioned on said trans-aisle vehicle, and a storage magazine is provided for storing mobile transfer vehicles not in use.

3,880,300

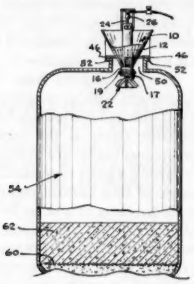
APPARATUS FOR DISTRIBUTING PARTICULATE MATERIAL OVER A ZONE

George A. Uhl, Markham, Ill., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 28, 1974, Ser. No. 455,704

Int. Cl. B65g *65/32*

U.S. Cl. 214—17 CB **15 Claims**



1. Apparatus for distributing particulate material over a zone, said apparatus being located so that the distances between the apex of a cone, described hereinafter, and at least two points of equal latitude on the sidewalls of said zone are not equal, comprising:

a supply hopper, having an inlet and an outlet, for holding particulate material;

a rotatable shaft adapted for connection to a motor to be rotated thereby; and

a distributor element supported by said shaft for rotation therewith adjacent said supply hopper outlet so that at least a portion of said particulate material leaving said supply hopper outlet comes in contact with said distributor element, said distributor element having a substantially conical configuration with the apex of said cone being adjacent said supply hopper outlet and said cone having a plurality of vertically disposed deflection fins extending radially on the exterior sloped surface of the cone, the distances between different points of said supply hopper outlet and the apex of said cone being varied in a predetermined pattern so that said particulate material is substantially uniformly distributed over the cross section of said zone;

whereby as said distributor element is rotated a portion of particulate material leaving said supply hopper outlet comes in contact with the exterior sloped surface of said conical distributor element to be deflected radially therefrom and another portion of said particulate material leaving said supply hopper comes in contact with said deflection fins to be deflected tangentially thereby.

3,880,301

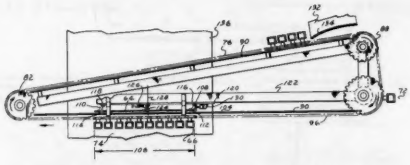
APPARATUS FOR HANDLING WORKPIECES

Joseph R. Reilly, Naugatuck, Conn., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 14, 1973, Ser. No. 424,866

Int. Cl. B65g *47/38*

U.S. Cl. 214—21 **8 Claims**



1. Workpiece handling apparatus comprising:

A. a plurality of upright carrier assemblies, each including a post means and a holder portion for supporting a workpiece associated with said post means;

B. means for abruptly shifting each holder portion with respect to the post means to a workpiece-release position and for returning each holder portion to a workpiece-engaging position;

C. a bar assembly for simultaneously actuating the means for abruptly shifting a group of holder portions of the plurality of carrier assemblies to workpiece-release positions at a discharge station;

D. means supporting said plurality of carrier assemblies for continuous sequential movement along a path through a loading and said discharge stations;

E. a socket beneath each holder of said group for accepting a released workpiece; and

F. an adjustable chute assembly for guiding released workpieces into the sockets.

3,880,302

DRIVE AND SUPPORT MECHANISM FOR ROTARY AND ANGULARLY ADJUSTABLE MEMBER

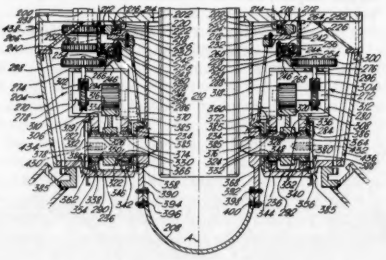
Edouard Legille, Luxembourg, Luxembourg, assignor to S.A. Des Anciens Etablissements Paul Wurth, Luxembourg, Luxembourg

Filed June 11, 1973, Ser. No. 368,867

Claims priority, application Luxembourg, June 16, 1972, 65537

Int. Cl. F27b *1/20*

U.S. Cl. 214—35 R **7 Claims**



1. A drive and support mechanism for a rotary and angularly adjustable material distribution chute positioned internally of a furnace comprising:

generally annular rotary support means positioned coaxially of a port in the furnace wall, and supporting the distribution chute, said support means being located externally of the furnace;

means for imparting rotational motion to said support means;

first and second gear box means mounted on said support means and movable therewith, said gear box means being oppositely disposed with respect to the distribution chute and each other and supporting drive gear means;

drive shaft means extending from each of said gear box means, said drive shaft means being operatively associated with said drive gear means and being disposed in the same plane for rotation about an axis transverse to the axis of rotation of said support means;

means rigidly connecting oppositely disposed points on the distribution chute to respective of said drive shaft means whereby the chute will follow the movements of said support means and said drive shaft means; and

means including the drive gear means in said gear box means for transmitting rotational motion to said drive shaft means independently of the rotary motion of said support means.

3,880,303

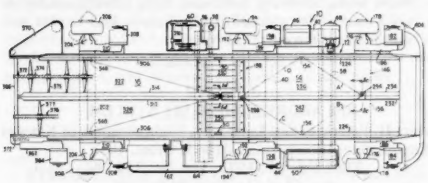
ARTICULATED HAULAGE VEHICLE

Arthur B. Coval, Columbus, Ohio, assignor to FMC Corporation, Chicago, Ill.

Division of Ser. No. 347,645, April 4, 1973, Pat. No. 3,827,721. This application Apr. 16, 1974, Ser. No. 461,273

Int. Cl. B60p *1/38*

U.S. Cl. 214—83.36 **8 Claims**



1. An articulated haulage vehicle comprising,

a frame member having a front section and a rear section, each of said sections having a front portion and a rear portion,

universal means connecting said frame member front section to said frame member rear section to permit articulation in a plurality of different planes between said frame member front sections and said frame member rear section,

a pair of rear wheels mounted on opposite sides of said frame member rear section adjacent the rear portion of said frame member rear section,

a pair of intermediate wheels mounted on opposite sides of said frame member rear section adjacent the front end portion of said frame member front section,

a pair of front wheels mounted on opposite sides of said frame member front section adjacent the front end portion of said frame member front section,

a body member having a floor portion with a pair of side walls extending upwardly therefrom and forming an elongated longitudinal compartment therebetween, said body member front portion having a front edge portion,

said body member mounted on said frame member rear section with said front edge portion spaced rearwardly from said frame rear section front end portion,

a boom member having a floor portion with a pair of spaced side walls extending upwardly therefrom and forming an elongated longitudinal compartment therebetween, said boom member floor portion having a rear edge portion,

said boom member mounted on said frame member front section with said rear edge portion spaced forwardly from said frame front section rear end portion,

flexible plate means connecting said boom member floor rear edge portion to said body member floor front edge portion to permit said boom member and said body member to articulate in a plurality of different planes and forming a continuous longitudinal haulage compartment, and

endless conveyor means extending along the surfaces of said boom member floor portion, said body member floor portion and said flexible plate means, said endless conveyor arranged to convey material in said articulated longitudinal haulage compartment.

3,880,304

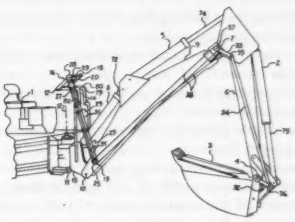
MIMIC POSITIONING CONTROLLER FOR A HYDRAULICALLY ACTUATED BACK HOE

William A. Strickland, Jr., 5 Marberne Ter., Livingston, N.J. 07039

Filed Feb. 11, 1972, Ser. No. 225,385

Int. Cl. B66f *19/00*

U.S. Cl. 214—138 R **5 Claims**



1. A controller for a hydraulically driven back hoe; the back hoe utilizing the following present day commercially, available, items:

1. An engine prime mover,
2. Main hydraulic pump or pumps,
3. Hydraulic linear or rotary actuators used to drive the digging members,
4. Main digging members including; (a) a dipper, (b) a dipper arm (c) a crowd arm, (d) rotational (swing) base for members a, b, and c,
5. Hydraulic, pneumatic or electric reversible, stepless signal devices, of standard commercial types, that are used to provide the pilot signals to hydraulic pneumatic or electric actuated main hydraulic valves that control the flow of hydraulic fluid to the main actuators that in turn control the movement of the dipper, dipper arm, crowd arm, and swing support members;

and the following novel assemblies:

A. means for continously transmitting the dippr angle, dipper arm angle, the crowd arm angle, and the swing base position angle-with significient force-greater than the operator's strength to resist that transmitting effort,

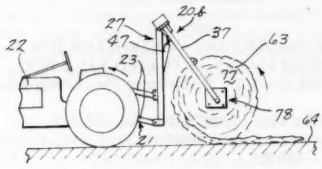
B. a means for representing and mimicing the exact angular position of the main digging members (dipper, dipper arm, crowd arm, and rotary or swing base) by small scale equivalent members,

C. means for mounting the signal devices, on the mimic or main members and which signal devices actuate the means for continuously driving the main and mimic members to follow pattern elements, and

D. pattern control elements that represent the dipper, dipper arm, crowd arm, and swing base, in the same small scale as the mimic members, and located with respect to the mimic members so that the pattern members break down the operator's hand movement into the proper vector signals of direction and speed for each of the four sets of main and mimic members required to make the four main digging and mimic elements actuate the signal devices and follow the exact relative sequence of posi-

tions as set up by the positions of the pattern elements wherein said positions of the pattern members comprise direction and speed vectors.

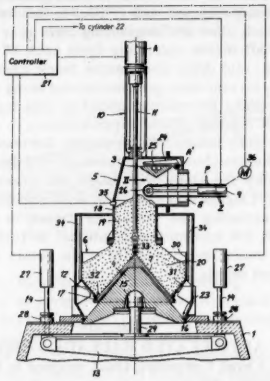
3,880,305
BALE HANDLING APPARATUS
James C. Van Polen, R.R. No. 2, Bussey, Iowa 50044
Filed Sept. 17, 1973, Ser. No. 398,221
Int. Cl. B66f 9/18
U.S. Cl. 214—147 G **7 Claims**



1. Apparatus for handling hay bales comprising:
a. a portable frame,
b. an upright main frame extended transversely of said portable frame,
c. means supporting said upright frame adjacent one end of said portable frame,
d. a pair of bale gripping arms arranged at opposite sides of said upright frame,
e. means movably supporting one of the ends of said jaws adjacent the upper end of said upright frame for pivotal movement of the opposite ends of said jaws toward and away from each other transversely of said main frame and for pivotal movement toward and away from said one end of the portable frame, including a transverse rock shaft rotatably supported at the upper end of said upright frame having end portions projected laterally outwardly from opposite sides of said main frame, and
f. means pivotally supporting the one ends of said bale gripping arms on said rock shaft end portions for pivotal movement about axes extended transversely of said rock shaft.

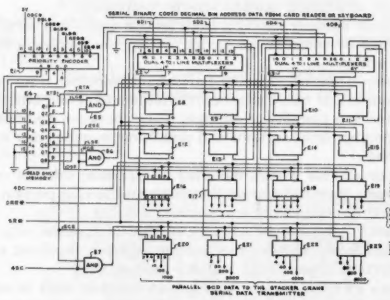
3,880,306
METHOD OF CHARGING A SHAFT FURNACE
Rudolf Grewer; Herbert Hickmann, and Wolfgang Welke, all of Oberhausen, Germany, assignors to Thyssen Niederrhein AG Hutten-und Walzwerke, Oberhausen, Germany
Division of Ser. No. 324,132, Jan. 16, 1973, Pat. No. 3,827,584. This application Oct. 16, 1973, Ser. No. 406,785
Int. Cl. F27b 1/12
U.S. Cl. 214—152 **1 Claim**

1. A method of charging a shaft furnace which comprises:
a housing disposed above the furnace;
an inlet formed in said housing;
a gate for closing said inlet externally of said housing;
an outlet between said housing and said furnace below said inlet;
an upwardly convex outlet bell for closing said outlet;
an upwardly open bucket between said inlet and said outlet in said housing; and
a further bell engageable with the bottom of said bucket to close the latter, said method comprising the steps of:
a raising said further bell against the bottom of said bucket and said bucket toward said inlet to close said inlet within said housing with said further bell;
b. charging pellets through said inlet into said housing and into said bucket onto said further bell while closing said outlet with said outlet bell;
c. linearly lowering said bucket with said further bell closed thereagainst while continuing to charge pellets into said bucket at a rate such that the top of the pile of pellets in said bucket remains at a substantially constant level adjacent said inlet and until said further bell come to rest upon said outlet bell;



d. closing said gate; and
e. retaining said bucket against further downward movement while lowering both said bells simultaneously to open said outlet and spill the pellets in said bucket into said furnace through said outlet.

3,880,307
BIN ADDRESS MEMORY SYSTEM
Robert H. Peterson, Salt Lake City, Utah, assignor to Kenway Engineering, Incorporated, Woods Cross, Utah
Filed Feb. 27, 1973, Ser. No. 336,284
Int. Cl. G11c 7/00; B65g 1/00
U.S. Cl. 214—152 **3 Claims**



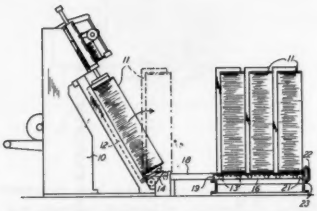
1. A method of controlling an automated warehousing system comprising a stacker crane, storage bins and tote pans, the steps of:
issuing binary bin address signals identifying the storage bin location of a tote pan desired to be retrieved on either side of a stacker crane traversing aisle;
communicating said binary address signals to gating means;
issuing enable signals to the gating means;
gating said bin address signals to a first memory;
issuing tote pan retrieve command signals from control means to said first memory causing the bin address data to be fed back and gated through said gating means to both a storage memory and through an additional third memory to a data transmitter which controls the stacker crane to retrieve the desired tote pan and locate the same at a picking station.

3,880,308

SHEET STACK HANDLING METHOD

Anton R. Stobb, Pittstown, N.J., assignor to Stobb, Inc., Clinton, N.J.

Division of Ser. No. 409,733, Oct. 25, 1973, Pat. No. 3,853,234. This application Aug. 1, 1974, Ser. No. 493,671
Int. Cl. B65g 67/02
U.S. Cl. 214—152 4 Claims



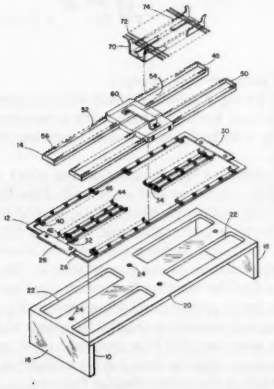
1. A method for handling stacks of sheets, comprising the steps of mobilizing said stacks by attaching wheels thereto, rolling said stacks onto a pallet, disposing said pallet at a declining angle to have said stacks roll downwardly on said pallet and form a row of said stacks, shifting said pallet with said row of said stacks laterally of said row, moving additional ones of said stacks onto said pallet in an additional row of said stacks, moving said pallet with said stacks thereon to a distribution station, and moving said stacks off said pallet.

3,880,309

FIXTURES FOR UNLOADING AXIALLY ALIGNED COMPONENTS

O'Dell F. Keil, Phoenix, and Milan L. Lincoln, Scottsdale, both of Ariz., assignors to Motorola, Inc., Chicago, Ill.

Filed May 3, 1974, Ser. No. 466,573
Int. Cl. B65g 65/04
U.S. Cl. 214—310 9 Claims



1. Apparatus for transferring a plurality of items located on a first support means and being spaced apart a first predetermined distance, the predetermined distances constituting a first spacing density, to a second support member at a predetermined spacing density, comprising:

a. a first frame member having an open portion and supporting a first plurality of recesses, said plurality of recesses being disposed in a pair of rows oppositely spaced and located at opposite sides of the open portion, each of said first plurality of recesses having a nadir support surface spaced apart at a second spacing density;

b. a second frame member having an open portion and being adaptable for nesting in a nested position within the first member and also having an open portion, said second frame member including a second plurality of recesses disposed in a pair of rows oppositely spaced and located at opposite sides of its open portion, each of said second plurality of recesses having a nadir support surface spaced apart at said second spacing density, and each of said second plurality of recesses having an upper opening dimension equal to or greater than the first predetermined distance; and

c. means for positioning said second frame member within said first frame member in said nested position in a fixed relationship for locating said nadir support surfaces of second plurality of recesses below the nadir surfaces of said first plurality of recesses, and

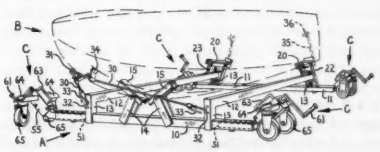
d. the openings associated with the first and second frame members being capable of receiving the first support means carrying a plurality of items for unloading a first group of alternate items onto the first frame member and a second group of alternate items onto the second frame member, the second frame member being employed to load a second support member requiring items to be spaced at said predetermined spacing density when said first frame member is lifted to a position completely above said second frame member.

3,880,310

DOLLY WITH REMOVABLE JACKING WHEEL UNITS

Louis A. Hunziker, 783 Commerce Ave., Longview, Wash. 98632

Filed Oct. 19, 1973, Ser. No. 407,988
Int. Cl. B60 1/02
U.S. Cl. 214—512 9 Claims



1. A dolly comprising a ground supported load carrying frame, a plurality of wheel units, connecting means on the periphery of said frame engageable with said wheel units to

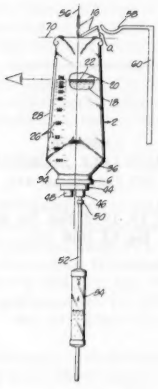
connect said wheel units to said frame while said frame and wheel units are resting on the ground, and jack means in said wheel units for lifting said frame off the ground so that said frame and load may be moved about on said wheel units, said connecting means comprising sockets in said frame and a connecting member on each wheel unit insertable in one of said sockets, said sockets comprising the open ends of hollow horizontal beams in said frame, and said connecting member on each wheel unit comprising a horizontal arm insertable into one of said hollow beams, said horizontal arm on each of said wheel units comprising the lower end of a bent arm having an upwardly extending upper end, said jack means being operable on said upper end of said bent arm, said upper end of said bent arm making an angle of approximately 135° with respect to said horizontal lower end, and said jack means comprising a screw jack with hand crank.

3,880,311

COLLAPSIBLE MEDICAL LIQUID BOTTLE WITH CALIBRATION AND LABEL ORIENTING HANGER STRUCTURE

Charles J. McPhee, Sylmar, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Feb. 26, 1974, Ser. No. 445,851
Int. Cl. B65d *23/10*
U.S. Cl. 215—7 **11 Claims**



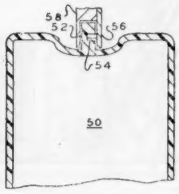
1. In a thermoplastic bottle for sterile medical liquids having an indented base with an integral hinged hanger connected therein, and a lug for holding the hanger in a folded condition within the recess, the improvement of: a generally oval collapsible thermoplastic bottle with a longitudinal major axial plane bisecting the bottle into front and rear halves; a label indicating the bottle's contents, and volumetric calibrations, both of which are connected to a front half of the bottle that changes shape as liquid is dispensed from the bottle; and a retention lug system that retains the hanger in the recess when the hanger is folded rearwardly but not when the hanger is folded forwardly, whereby sterilization and storage of the hanger is such rearwardly folded condition causes the hanger to take an angular set in a direction facing rearwardly from both the label and the calibrations.

3,880,312

BOTTLE WITH DEPENDING SUPPORT TAB

Dixie E. Gilbert, Orangeburg, N.Y., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 254,741, May 18, 1972, Pat. No. 3,821,345, which is a division of Ser. No. 103,380, Jan. 4, 1971, Pat. No. 3,687,593. This application Jan. 31, 1974, Ser. No. 438,427
Int. Cl. B65d *23/00*
U.S. Cl. 215—100 R **7 Claims**



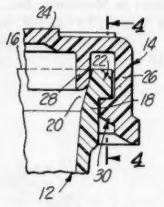
1. A biaxially oriented thermoplastic container having a short depending tab on the bottom surface thereof, said tab having a plurality of identations alternately spaced on either side thereof.

3,880,313

SAFETY CAP AND CONTAINER

Edward G. Akers, 3177 Park Ln., Apt. 239, Dallas, Tex. 75220

Filed Mar. 4, 1968, Ser. No. 710,032
Int. Cl. B65d *55/02*
U.S. Cl. 215—211 **9 Claims**

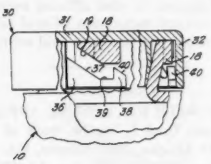


1. A safety package comprising:
a container having a mouth portion with an annular rim;
a one-piece cap having a base with a peripheral flange projecting axially therefrom for receiving said mouth portion;
interengageable locking elements on the outer wall of the mouth of the container and inner wall of the flange of the cap, the cap locking elements being spaced peripherally from each other and engageable with and disengageable from the container locking elements by combined axial and rotative motion of the cap relative to the container;
a resilient flexible member formed on the base of the cap having an inner annular end joined integrally to the base of the cap and extending axially therefrom and terminating in an outer annular free end, said inner annular end at the juncture with the base having a diameter at least as large as that of the outer annular free end;
said outer annular free end being engageable with the container to exert a biasing force in an axial direction between the cap and container when the locking elements are engaged.

3,880,314
CONTAINER AND SAFETY CAP

Edward G. Akers, 3177 Park Ln., Apt. 239, Dallas, Tex. 75220

Filed Apr. 16, 1973, Ser. No. 351,770
Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*
U.S. Cl. 215—214 **9 Claims**



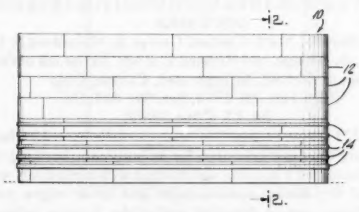
1. A container and safety cap therefore; said container having a top opening defined by a generally cylindrical wall having a planar outer lip; said cap having a generally planar top wall and a dependent generally cylindrical side wall; and coacting ratchet means on the external surface of said container wall and on the internal surface of said cap side wall respectively, being normally engaged when said cap is positioned on said container and rotated in one direction so as to prevent relative rotation in the other direction; said ratchet means being normally maintained in engagement by spring means associated with said cap coacting with said container; wherein the improvement comprises:

said coacting ratchet means including coacting cam surfaces inclined relative to a plane perpendicular to the axis of relative rotation; said cam surfaces, responsive to further rotation of the cap in said one direction, effecting movement of said cap axially to position said cap top wall contiguous to said container lip; and coacting interfering latch means disposed on a cap wall interior surface and said container wall exterior surface respectively to inhibit reverse rotation of said cap from said contiguous position.

3,880,315
LARGE VOLUME TANKS

Norman W. Nelson, Chester, and Donald A. Hayes, Florham Park, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Sept. 11, 1972, Ser. No. 288,118
Int. Cl. B65d *7/02, 7/42*
U.S. Cl. 220—5 A **4 Claims**



1. A cylindrical storage tank of the type having a circular bottom plate attached at its circumference to a cylindrical wall extending perpendicularly upward from the plane of the bottom and comprising a series of ring courses of uniform thickness attached at their edges to adjacent ones of said courses, wherein the improvement comprises:

a. a support band secured about the lowest of said courses at a point where the radial deflection is greatest as defined by the equation,

$$w/p_o R^2/ET_o = T_o/T_1 \quad 1 - BZ/BL - e^{-BZ}(\cos BZ + M_p \sin BZ) + Z/L$$

Where:

Z = Distance up tank wall from tank bottom
w = Radial deflection outward
p_o = Radial pressure outward at the bottom
R = Tank radius
E = Young's Modulus
T_o = Calculated thickness of unstiffened bottom course
T_1 = Actual thickness of bottom course
L = Combined height of courses requiring reinforcement
v = Poisson's ratio
$B = 3(1-v^2)^{1/4}/RT_1$
M_p = (plastic hinge moment of tank bottom plate × $2B^2/po$

b. at least one additional support band secured about a ring course above said lowest course and thinner than said lowest course, the number of said bands being between $0.7\ (h_e - h_b)B$ and $(h_e - h_b)B$,

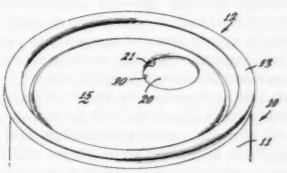
Where:

h_e = height of the tank where the actual and calculated thickness are equal
h_b = height of the band of (a).

3,880,316
EASY OPEN PUSH BUTTON ECOLOGY END

Mario A. Martella, Los Angeles, Calif., assignor to Dayton Reliable Tool & Mfg., Co., Dayton, Ohio

Filed Nov. 8, 1973, Ser. No. 413,842
Int. Cl. B65d *17/00*
U.S. Cl. 220—268 **14 Claims**



1. A container having an easy opening push-button panel end comprising:

means forming a container,

end wall means secured to said container and forming a closure therefor,

panel means in said end wall capable of forming an opening therein,

said panel means being defined by a score line formed in said end wall whereby application of force downward on said panel means effects rupture of at least a portion of said score line to form an opening in said end wall by urging said panel means into said container, the rupture of said score line creating a free edge capable of causing laceration,

said score line being so disposed on said end wall that the score faces away from the interior of said container while the unscored metal to the rear of said score faces towards the interior of said container,

protective means cooperating with said end wall and said panel means and including protective guard means overlying said panel and said score line to prevent contact between said free edge and the user while preventing said panel from being withdrawn through the formed aperture in said end wall,

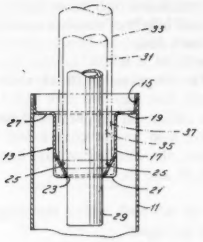
said end wall including a folded portion radially outwardly of said guard means, and

said score line being located on the portion of said panel between the folded portion and said guard means.

3,880,317
INLET INSERT

Lawrence E. Arnett, Wayne, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 2, 1973, Ser. No. 337,514
Int. Cl. B65b *3/04*; **B65d** *25/00*
U.S. Cl. 220—86 R **11 Claims**



1. A device to reject a nozzle spout having a maximum cross-sectional dimension greater than a predetermined magnitude and to accept a nozzle spout having a maximum cross-sectional dimension equal to or less than the predetermined magnitude,

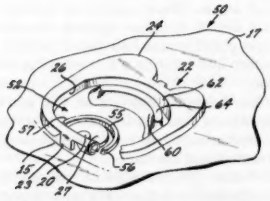
said device comprising a member positioned within an inlet of a container including a wall portion extending generally in the axial direction of the inlet and a substantially perpendicular downstream partially closed end portion having an opening having a cross-sectional dimension equal to a predetermined magnitude therein constructed to accept a nozzle spout of a maximum cross-sectional dimension of said predetermined magnitude or less and to reject a nozzle spout of a maximum cross-sectional dimension greater than said predetermined magnitude,

said member including spaced abutment means protruding from said wall portion upstream of said end portion and being axially engageable with the delivery end of a nozzle spout of a dimension greater than said predetermined magnitude to prevent said delivery end from axially engaging said end portion and to maintain said delivery end in a position spaced upstream from said end portion.

3,880,318
REINFORCED EASY OPENING END STRUCTURE

Ermal C. Fraze, 355 W. Stroop Rd., Dayton, Ohio 45429

Filed Dec. 7, 1973, Ser. No. 422,664
Int. Cl. B65d *41/32*
U.S. Cl. 220—273 **21 Claims**



1. An easy opening end for containers comprising:

an end wall including a score line defining an opening in said end wall in response to rupture of at least a portion thereof;

tab means and means to affix said tab means to an end wall; said end wall including protective guard means cooperating with said score line;

said tab including a nose and a lifting end and being so oriented that said nose is adjacent the score line and the lifting end extends towards the center of said end wall;

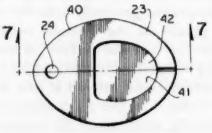
said tab being operative in normal operation to initiate rupture of said score line in response to movement of said lifting end away from said end wall, and

means in said end wall and operative as the end of said tab is lifted at the start of an opening sequence to prevent upward flexing of the portion of said end wall underlying said tab and adjacent to said affixing means tending to allow radially inward movement of said tab nose out of operative rupturing position with said score line.

3,880,319
CONTAINER WITH RECLOSURE APPARATUS

Robert A. Wells, and Carl J. Strobe, both of Atlanta, Ga., assignors to SMW Atlanta, Inc., Atlanta, Ga.

Continuation of Ser. No. 216,709, Jan. 10, 1972, Pat. No. 3,807,597. This application Mar. 15, 1974, Ser. No. 451,506
Int. Cl. B65d *17/00*
U.S. Cl. 220—278 **9 Claims**



1. Openable and selectively reclosable container apparatus, comprising:

a container member having a surface and forming a portion of a container which is enclosed for the purpose of containing a product;

a container opening element which is at least partially defined on said container member by a region of predetermined structural weakness relative to the remainder of the container member, said opening element being selectively severable along said region of weakness to become displaced from said surface to provide an opening in said container member;

closure means configured to removably fit into and close said opening in said container opening member; and

said closure means being selectively movably disposed on said container to removably dispose said closure means in closure relation with said opening which is provided in said container member when said opening element is displaced from said surface.

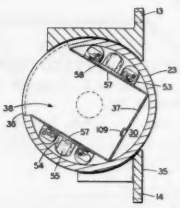
3,880,320
ROTARY CASH DRAWER MECHANISM FOR CURRENCY DISPENSER

Herbert Morello, North Canton; George S. Mountford, Chippewa Lake Village, and Richard E. Keck, Akron, all of Ohio, assignors to Diebold, Incorporated, Canton, Ohio

Filed Feb. 25, 1974, Ser. No. 445,236
Int. Cl. G06c *29/00*
U.S. Cl. 221—9 **23 Claims**

1. Rotary drawer mechanism for an automatic banking unit housing including a housing wall formed with a relatively wide elongaged slot having spaced upper and lower edges; rotor support frame means mounted within the housing adjacent said slot; a rotor having a cylindrical wall journaled for rotation in the support means; a portion of the rotor wall projecting through said slot; a longitudinally-extending arcuate slot formed in the rotor wall having edges adapted in a first "open" rotor position to register with the housing slot edges; liner means in the rotor forming a pocket having a wide open mouth with lips registering with said arcuate slot; the rotor being movable between said first position and a second "home" position in which the pocket mouth is oriented to open inward within the housing, and a third "dump" position

in which the pocket mouth is oriented to open downward within the housing; first drive means positively engageable with the rotor to rotate the rotor in one direction from "dump" to "home" position and from "home" to "open" position; second drive means having driving engagement with the rotor yieldable to rotor motion-resistance to rotate the rotor in the other direction from "open" to "dump" position;



means operatively connected with the first and second drive means operative to selectively engage the first or second drive means with the rotor; releasable lock means engageable between the rotor and frame means locking the rotor in "home" position; and releasable means engageable between the rotor and frame means operative to prevent reverse movement of the rotor when the rotor is being driven by said second drive means.

3,880,321

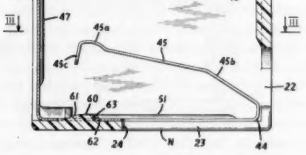
SPRING CLIPS FOR RAZOR BLADE CARTRIDGE MAGAZINES

Paul A. Braginetz, Staunton, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 334,746, Feb. 22, 1973, Pat. No. 3,833,146. This application Mar. 15, 1974, Ser. No. 451,462

Int. Cl. B26b *21/24*

U.S. Cl. 221—66 **12 Claims**



1. A spring clip for holding a stack of razor blade cartridges of generally oblong shape comprising a U-shaped member of elastic sheet metal having a main rear wall and top and bottom projecting legs, each of said legs being bifurcated to provide leaf fingers laterally spaced adapted to engage an adjacent cartridge with an intervening slot between the fingers.

3,880,322

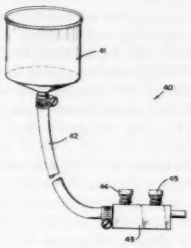
BALL BEARING FEEDER

George E. Shreev, Union City, Ind., assignor to Gene B. Symmonds, Indianapolis, Ind.

Division of Ser. No. 359,788, May 14, 1973, Pat. No. 3,848,771. This application Nov. 7, 1973, Ser. No. 413,588

Int. Cl. B65g *59/06*

U.S. Cl. 221—296 **2 Claims**



1. A ball bearing feeder having a hand held ball bearing discharge block comprising:

a rigid block including a chamber with an entrance opening and an exit opening through which a plurality of ball bearings may pass, said chamber is sized to allow a predetermined fixed number of ball bearings to be within said chamber in a single row, said block also including an external slot opening into said chamber and extending at least partially from said entrance opening to said exit opening and being sized to prevent said ball bearings from passing through said slot;

first and second plungers independently operated and slidably mounted to said block adjacent respectively said entrance opening and said exit opening and extending into said chamber, said plungers including springs normally biasing said plungers to block said chamber but yieldable when said plungers are depressed to allow movement of said plungers from said chamber, said plungers are spaced apart a fixed unchangeable distance;

a flexible tube mounted to said block forming a passage containing a single row of ball bearings, said tube having a top end and a bottom end, said bottom end being connected to said block directing ball bearings within said tube to move through said entrance opening of said block;

a container of ball bearings elevated relative to said block, said container having an outlet stem connected to said top end of said tube with ball bearings within said container moving therefrom under gravity force through said tube to said block.

3,880,323

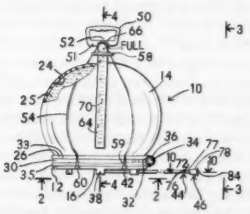
SELF-PRESSURIZED CONTAINER FOR LIQUIDS

John S. Viehe, 692 Talamini Rd., Somerville, N.Y. 08876

Filed Apr. 26, 1974, Ser. No. 464,695

Int. Cl. B65d *37/00*

U.S. Cl. 222—47 **9 Claims**



1. A self-pressurized container for liquid, comprising:

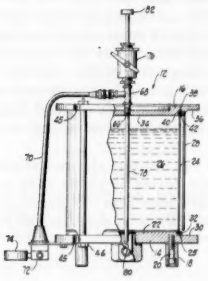
a circular base plate having an axially extending, depending, cylindrical skirt with radially extending peripheral rim:
a circular elastic membrane having an axially extending, depending, cylindrical wall surrounding said skirt, said membrane having an inner circumferential recess receiving and engaging the rim of the base plate so that the membrane overlays the plate and defines a closed chamber therewith;
a band encircling the wall of the membrane;
a clamp adjustably securing the band around the wall to hold the membrane in place on the plate;
means for filling and emptying the chamber opening into said chamber through the axial center of said base plate;
a handle for use in carrying the container
a plurality of cords engaged with said handle and depending therefrom:
attachment means securing ends of the cords to said skirt at circumferentially spaced points;
a guiding and centering member for the cords positioned over the membrane and under the handle, said member having a plurality of spaced holes and a slot between the holes, said cords extending through said holes respectively, so the cords extend tautly around the membrane in circumferentially spaced positions when the membrane is stretched; and
a tape secured to the handle and extending slidably through said slot and between the cords to prevent twisting of said member and tangling of the cords.

3,880,324

PASTE-LIQUID DISPENSER WITH REMOVABLE PUNCTURE ROD

Thomas L. Roesel, Lansing, Ill., and Russell L. Buehrle, Highland, Ind., assignors to SCM Corporation, Cleveland, Ohio

Filed Jan. 14, 1974, Ser. No. 433,274
Int. Cl. B67b *7/24*
U.S. Cl. 222—82 **3 Claims**



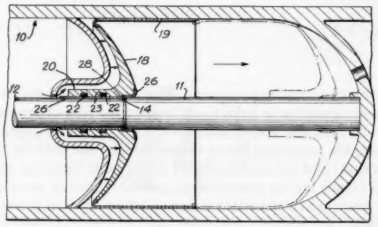
1. An apparatus for dispensing viscuous materials such as brazing paste from a shipping container, the latter having a bottom end and a removable top cover, comprising:
a supporting stand;
a bottom plate supported by said stand against which the container bottom end seats;
a top cover plate;
seal means integral with the cover plate adapted to sealingly engages the upper rim of the container open end;
clamping means adapted to clamp the cover plate against the upper rim of the shipping container;
an air inlet means in the top cover plate;
said air inlet means including a guide tube perpendicular to the cover plate and valve means movable between open and closed positions to open and close the guide tube;
puncture rod means for inserting through said guide tube when in the open position for puncturing the container bottom, said rod means being removable following puncture of the container bottom;
a dispensing connection in the bottom plate adapted to be in sealed engagement with the puncture opening formed by said puncture rod means;
and follow plate means insertable after removal of the puncture rod means within the container open end, said follow plate means being in wiping engagement with the shipping container inner walls and movable to the container bottom into a position for substantially complete removal of the material being dispensed and for sealing the puncture opening.

3,880,325

FRANGIBLE SEAL FOR FLUID DISPENSING DEVICE

George B. Rabe, Sparta, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed Aug. 16, 1966, Ser. No. 574,490
Int. Cl. F23n *1/00;* **F23r** *1/02*
U.S. Cl. 222—95 **10 Claims**



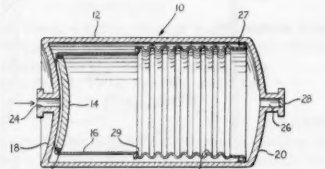
1. The combination with a liquid storage tank from which liquid is to be expelled and a wall including dynamic seals mounted for sliding movement on the inner surface of the tank to expel the fluid; of a hermetic seal sealed to the inner surface of the tank and to the movable wall to isolate the liquid from the dynamic seals in the storage position, said hermetic seal being peripherally scored to facilitate rupture thereof by the tensile load applied thereto by movement of the wall with respect to the tank.

3,880,326

DIAPHRAGM STRUCTURE FOR DISPENSING FLUIDS

Harry M. Kennard, Chester; James R. Handzel, Towaco, and Elmore M. Peloubet, Sparta, all of N.J., assignors to Thiokol Chemical Corp., Bristol, Pa.

Filed Aug. 16, 1966, Ser. No. 574,493
Int. Cl. F23n *1/00;* **F23r** *1/02*
U.S. Cl. 222—95 **6 Claims**

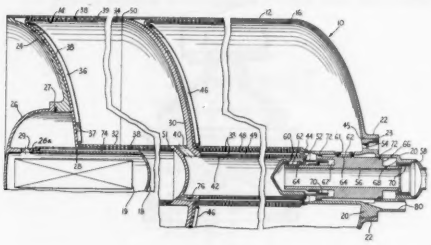


1. The combination with a liquid expulsion tank having a discharge outlet and a piston movable by a pressurizing medium from one inner end of the tank to the other to expel the liquid therefrom; of a cylindrical diaphragm and bellows hermetically sealed together at one end and respectively to the piston and to said tank at their other ends to isolate the pressurizing medium from the liquid, said diaphragm being rollable backwardly within itself and through said bellows by the piston upon liquid expelling movement thereof.

3,880,327
APPARATUS FOR POSITIVE FEEDING OF FLUID PROPELLANTS

Victor Brajer, Dover; Walter B. Grossman, Fair Lawn, and William S. Hosek, Mount Tabor, all of N.J., assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed Aug. 16, 1966, Ser. No. 574,494
Int. Cl. F23n *1/00*; **F23r** *1/02*
U.S. Cl. 222—95 **7 Claims**

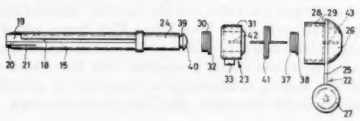


1. A fluid expulsion system comprising a tank for storing a fluid and having an outlet adjacent one side, a diaphragm in said tank having a rigid piston at one side and the remaining walls being flexible and composed of a material compatible with the fluid being stored and completely encapsulating the stored fluid, a slide movable relative to diaphragm, a seal in the form of a cup projecting into a recess in the slide for closing the outlet and sheared by the slide to connect the diaphragm to the outlet, means for supplying a pressurizing fluid to actuate the slide and rupture the seal in the outlet and actuate the piston to roll the diaphragm back on itself for discharging stored fluid therefrom, and said piston having a shape corresponding to the shape of the diaphragm at its opposite side for expelling all of the fluid therefrom.

3,880,328
DEVICE FOR SQUEEZING TUBES OF PASTE

George Joseph William Leeson, 86 Caroline St., South Yara, Victoria, Australia (3141)

Filed June 4, 1973, Ser. No. 366,976
Int. Cl. B65d *35/34*
U.S. Cl. 222—100 **6 Claims**

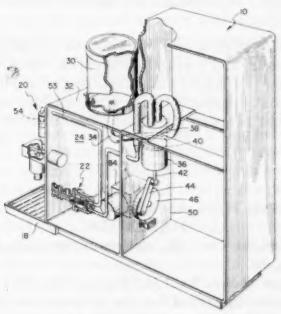


1. A device for squeezing the contents from tubes of paste, including a mandrel about which, in use, a tube is wound to expel contents therefrom, means for rotatably supporting the mandrel, actuating means for rotating said mandrel, a drive spring positioned about said mandrel and having a free end fixed with respect to said actuating means, said drive spring gripping and rotating said mandrel a predetermined amount each time said actuating means is actuated, means for resetting said actuating means by returning said actuating means and said drive spring to their original positions after said actuating means is released, a holding spring also positioned about said mandrel and having a free end fixed with respect to said means for rotatably supporting said mandrel, said holding spring gripping said mandrel to restrain the mandrel against movement while said actuating means and said drive spring are being returned to their original positions, and a pressure member having a curved surface at the point of engagement with the tube being supported at a position in advance of the mandrel wherein upon rotation of said mandrel to wind said tube thereabout the tube will be brought into pressure engagement with said pressure member but upon cessation of said rotation of said mandrel the tube is free to tend to move away from pressure engagement with the pressure member and the tube casing is free to relax to allow creation of a pressure lower than atmospheric pressure in said tube wherein a portion of the paste at the opening of said tube is forced back into said tube under the action of the higher atmospheric pressure externally of said tube.

3,880,329
LIQUID DISPENSING, DISPOSABLE CONTAINER FOR USE WITH A BEVERAGE DISPENSER

John A. Gardner, Jr., Tewksbury, and Merle S. Brown, Cohasset, both of Mass., assignors to Jet Spray Cooler, Inc., Waltham, Mass.

Continuation of Ser. No. 36,863, May 13, 1970, abandoned. This application Apr. 12, 1973, Ser. No. 350,512
Int. Cl. B67d *5/56*
U.S. Cl. 222—129.1 **14 Claims**



1. A liquid dispensing system adapted to draw liquid contents from a disposable container open at a rim at one end comprising

a lid having a closure wall and having a skirt made of a flexible material designed to fit over the open end of the container and form a seal about the open container end, a nipple connected to the closure wall and extending from the wall away from the container, said nipple being normally closed and remaining closed under the head of the liquid in the container when the container is oriented with its open end facing down,

a rigid backup plate disposed against the closure wall of the lid and adapted to lie over the rim of the open end of the container when the lid is mounted on said container so as to prevent inward movement of said closure wall,

said nipple carrying means for connecting the nipple to a duct for conveying the liquid to a desired location.

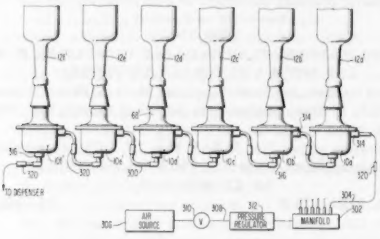
3,880,330
LIQUID DISPENSING SYSTEM AND RECEPTACLE THEREFOR

Vernon E. Leas, and Jeffrey Alan Leas, both of Phoenix, Ariz., assignors to Diverse Venture Corporation, Phoenix, Ariz.

Continuation-in-part of Ser. No. 264,611, June 24, 1972, Pat. No. 3,768,701. This application Oct. 4, 1973, Ser. No. 403,723
Int. Cl. B67d *5/54*
U.S. Cl. 222—136 **11 Claims**

1. Apparatus for dispensing liquids from a plurality of inverted liquid containers comprising; a plurality of liquid receptacles, each of said receptacles having an inlet for receiving liquid from an inverted liquid container, means carried by each of said receptacles for sealing between said receptacle and the inverted liquid container and having a passage enabling the liquid from each container to flow into the corresponding receptacle, means connecting said receptacles in series one with the other for communicating liquid successively through said receptacles, a source of gas under pressure,

means coupling said gas source to a first of said serially connected receptacles for pressurizing the liquid in said receptacles and the inverted containers, a dispensing faucet, means coupling the last serially connected receptacle to said faucet for dispensing liquid under pressure from the serially connected receptacles and enabling the containers to be successively emptied starting with the container emptying into said first receptacle, and a plurality of check valves respectively carried by the portions of said connecting means between next adjacent serially connected pairs of receptacles whereby back flow of liquid between the serially connected receptacles is precluded.

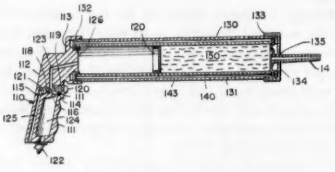


3,880,331

DISPENSING TOOL AND CARTRIDGE FOR VISCOUS MATERIALS

Garry R. Perkins, Cary, Ill., assignor to Spotnails, Inc., Rolling Meadows, Ill.

Continuation of Ser. No. 131,681, April 6, 1971, which is a continuation-in-part of Ser. No. 84,046, Oct. 26, 1970, abandoned. This application May 21, 1973, Ser. No. 362,390
Int. Cl. G01f *11/00*
U.S. Cl. 222—327 **4 Claims**



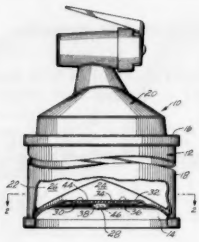
1. A pneumatically powered tool for controlled dispensing of a fluid viscous material in combination with a replaceable cartridge of the viscous material; said tool comprising a hollow housing connectable to a source of pneumatic pressure, an elongated cartridge-accommodating section extending from said housing and having an outer end and an inner end, the latter being connected to said housing, a dispensing piece mounted on said section outer end, protruding means carried by said housing adjacent the inner end of said elongated section for extending a limited distance into said elongated section, and control means on said housing for regulating pneumatic pressure at said section inner end; said cartridge including an elongated sleeve removably mounted within said section, a dispenser cap mounted on an end of said sleeve and in engagement with said dispensing piece, a closure cap initially mounted on the opposite end of said sleeve in a static sealed position and being released from said static sealed position by said protruding means when said cartridge is accommodated within said elongated section, said closure cap, subsequent to being released from the static sealed position being movable in a sealed relation longitudinally of said sleeve towards the dispenser cap upon a predetermined pneumatic pressure being exerted thereon.

3,880,332

FACE SEALING GASSING VALVE FOR PRESSURIZED DISPENSERS AND METHOD FOR INSTALLING IT

Merle G. Risdon, Norwalk, Calif., assignor to Sterigard Corporation, Santa Ana, Calif.

Filed Apr. 5, 1973, Ser. No. 348,308
Int. Cl. B65d *83/14*
U.S. Cl. 222—394 **10 Claims**



1. In a pressurized dispenser of the type adapted to maintain a product under pressure for selective dispensation through a dispensing valve and having a bottom closure end with a gassing hole, an improved gassing valve for the admission of a pressurizing propellant into the dispenser through the gassing hole comprising:

a. a supporting backing member of sufficient stiffness for the return of the member to its original position after charging the dispenser with the pressurizing propellant;

b. a layer of adhesive substantially completely covering one side of the backing member;

c. a predetermined area of the valve being permanently bonded to an inside surface of the bottom closure end on one side only of the gassing hole and spaced from the gassing hole with the predetermined area being substantially less than the whole valve area and leaving the adhesive unbonded to the closure end around the balance of the gassing hole, the unbonded adhesive and the adjoining portion of the backing member overlying the gassing hole and bounding the gassing hole, the unbonded adhesive also being in mating sealing relationship with the surface of the bottom closure end to prevent propellant from escaping out the gassing hole; and

d. the bonding of the valve and the backing member permitting the valve to bend back like a flap during propellant charging between the bonded predetermined area and the gassing hole and admit propellant and then bend back into the sealing relationship in response to propellant pressure in the dispenser after propellant charging.

3,880,333

APPLICATOR SYSTEM FOR FLUIDS

Barry Fleischer, 16170 Roanoke, Southfield, Mich. 48075

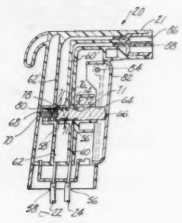
Filed Apr. 10, 1973, Ser. No. 349,751
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.18 **6 Claims**

1. A system for dispensing a fluid under pressure, comprising:

a. an applicator, the applicator comprising (1) a housing, (2) a first channel for storing a pressurizing medium formed within the housing, the channel having an inlet and an outlet, (3) an upper channel formed in the housing having an inlet thereto and an outlet, the inlet of the upper channel being laterally displaced from the outlet of the first channel, (4) a first chamber for storing a fluid formed within the housing, the chamber having an inlet and an outlet, an upper chamber formed in the housing having an inlet thereinto and an outlet, the inlet of the upper chamber being laterally displaced from the outlet of the first chamber, (5) an internal transverse housing

separating the first chamber from the upper chamber and their, respective, outlet and inlet and the first channel from the upper channel and their, respective, outlet and inlet, (6) axially slideable means for normally sealing off fluid communication between the chamber and the upper chamber through their, respective, outlet and inlet and the channel and upper channel through their, respective, outlet and inlet, the sealing means being disposed in the internal transverse housing, and wherein the channels have a volume substantially greater than the chambers,

b. a source of fluid,



c. a source of pressurizing medium,

d. valve means interposed in said system and associated with the source of fluid, the valve means providing fluid communication between the source of fluid, the source of pressurizing medium and the applicator,

e. quick action means for pulsatingly regulating the flow out of the applicator such that there is a first flow of pressurizing medium, a second flow of fluid, and a final flow of pressurizing medium, the means for regulating being disposed in the internal transverse housing,

and wherein movement of the sealing means provides fluid communication between the chamber and upper chamber and the channel and upper channel.

3,880,334

TIE CLEANING FORM

Antoinette M. Haas, 1630 Nottingham, Madison Heights, Mich. 48071

Filed May 6, 1974, Ser. No. 467,078
Int. Cl. D06c *15/00*
U.S. Cl. 223—82 **1 Claim**

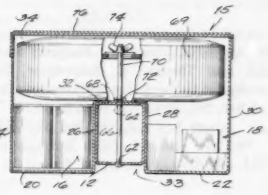
1. A form adapted to be inserted between the forward and rear layers of a tie to provide a backing surface during washing of the tie and shape retention during the subsequent drying of the tie, comprising: an elongated rigid board formed of transparent cast acrylic plastic having tapered sides so as to form a relatively wide end adapted to project out of the broad end of the tie when in use to form a supporting surface, the surfaces of the board having a surface finish of at least 25 microinches per inch, the thickness of the board being at least one-eighth inch and no greater than one-fourth inch and the edges thereof being rounded.

3,880,335

TRAILER STORAGE CONTAINER

Kurt K. Winkler, 11726 N. County Ln., Mequon, Wis. 53092

Filed June 29, 1973, Ser. No. 375,307
Int. Cl. B62d *43/00*
U.S. Cl. 224—42.13 **10 Claims**



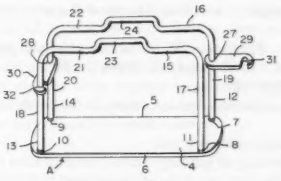
1. In the combination of a trailer having a tongue connectable to a towing vehicle and a winch post including a winch, and a boat hull on the trailer, the improvement comprising a storage container comprising wall means defining a first storage compartment, wall means defining a second storage compartment, a web portion interconnecting said first and second storage compartments, said first and second storage compartments being spaced by a gap to define a longitudinal channel beneath said web portion, said tongue being received in said channel and means connecting said container to said trailer tongue so that said first and second storage compartments are located laterally outwardly of said tongue, wall means located above said first and second storage compartments to define a third storage compartment spanning said longitudinal channel and said first and second storage compartments, a cover for said storage container spanning said storage compartments and having a planar surface providing a pedestal for supporting the operator of the winch to facilitate loading and unloading of said hull, said cover being located rearwardly of said winch post and forwardly of portions of said hull, and said means for connecting said tongue to said storage container also serving to detachably secure a spare wheel within said third container.

3,880,336

HOCKEY STICK CARRIERS

Amedee J. Demasson, Manitouwadge, Ontario, Canada (POT2CO)

Filed Jan. 4, 1974, Ser. No. 426,193
Int. Cl. B65d *9/30*
U.S. Cl. 224—45 S **1 Claim**



1. A carrier for pairs of hockey sticks comprising a substantially oblong base plate having ends and parallel sides defining a rectangular supporting surface, a pair of inverted U-shaped rods each having an intermediate connecting handle portion and two leg portions terminating in lower ends, said rods being disposed in spaced relation each lengthwise over a different one of said base plate sides with the lower ends of said leg portions rigidly affixed to said base plate so that said inverted U-shaped rods are parallel spaced from each other a distance at least equal to the width of two hockey stick handles, at least one crosspiece having one end portion connected to a leg

portion of one of said inverted U-shaped rods for pivotal and longitudinal sliding movement relative to said leg portion, and said crosspiece having another end portion notched to releasably engage a leg portion of the other of said inverted U-shaped rods upon pivotal movement of said crosspiece.

3,880,337

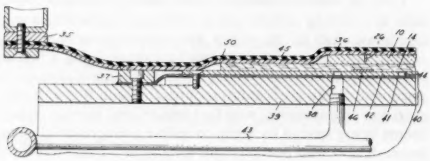
VACUUM GLASS STRIPPING APPARATUS

Eugene H. Augustin, Dearborn Heights; Roger E. Johnson, Westland, and Thomas L. Rakestraw, Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 368,392, June 8, 1973. This application June 3, 1974, Ser. No. 475,729

Int. Cl. C03b *33/04*

U.S. Cl. 225—96.5 **2 Claims**



1. A stripping assembly for use in stripping a scored glass bracket, the assembly comprising:

a. a porous conveyer means for carrying said bracket to and from the stripping assembly,

b. supporting means upon which said conveyer means rests within said stripping assembly, said supporting means having a perforate sheet with stress risers thereon arranged to be subjacent the scorings of said glass bracket,

c. a pressure membrane for exerting a uniformly distributed force against the scored surface of said glass bracket, said membrane extending beyond said glass bracket,

d. means for introducing vacuum against one side of said membrane to urge said membrane to apply stress to said bracket at said stress risers and thereby resulting in the severance of said glass bracket at predetermined locations.

3,880,338

ALIGNMENT SYSTEM FOR MULTIPLE YARN ENDS

Robert Lees, and William Dorne Braswell, both of Chester, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Apr. 25, 1974, Ser. No. 463,935

Int. Cl. B65h *57/04*

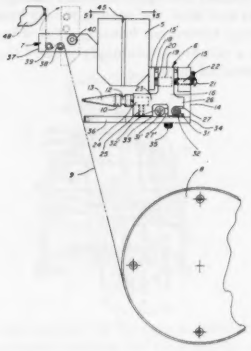
U.S. Cl. 226—91 **32 Claims**

25. An adjustable guide system for multiple yarn ends comprising:

A. mounting means; and

B. a plurality of guiding means, each of said guiding means having a groove, at least one of said guiding means having a tapered end extending beyond its respective groove, the number of guiding means having tapered ends extending beyond their respective grooves being at least one less than the number of said multiple yarn ends, all of said guiding means including pivot means thereon adatped for connection to said mounting means and on which any guiding means can pivot, all of said guiding means having first adjusting means thereon and by which the position of any guiding means can be adjusted along the axis of said pivot means, all of said guiding means having second adjusting means thereon and by which the position of any guiding means can be angularly adjusted about the axis of said pivot means;

whereby said multiple yarn ends can be precisely aligned to



within .001 inch resolution by adjustment of said adjustable guide means relative to said multiple yarn ends.

3,880,339

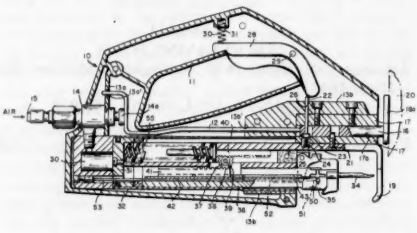
FASTENER DISPENSING APPARATUS

Arnold R. Bone, Needham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed July 2, 1973, Ser. No. 375,502

Int. Cl. B65c *7/00*

U.S. Cl. 227—8 **1 Claim**



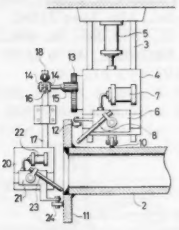
1. In an apparatus for dispensing fastener attachment members, said apparatus having a housing, a telescoping member supported by said housing and movable between a retracted position and an extended position relative to said housing, said telescoping member having means for supporting a needle through which a fastener attachment member portion is to be dispensed, the improvement comprising a support member coupled to said housing and having a bore, a pressure sensor member having a portion thereof slidable within the bore, said pressure sensor member portion within the bore having a bore and a first elongated slot which in part extends into the bore, a pin having a portion thereof positioned within the first slot of the sensor member, said pin supporting a disc for movement into said sensor member bore to prevent slidable motion of said pressure sensor member within said support member bore and out of said sensor member bore to to permit slidable motion of said pressure sensor member, spring means supported by said apparatus and engaging said disc to urge said disc into said bore, and in which said pressure sensor member engages a valve to open same to cause energy to be applied to drive said telescoping member to an extended position.

3,880,340

APPARATUS FOR WELDING A FLANGE TO A PIPE

Tetsuo Takeuchi, and Kaoru Shiozawa, both of Ichiharashi, Japan, assignors to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan

Filed May 13, 1974, Ser. No. 469,610
Claims priority, application Japan, May 14, 1973, 48-53402
Int. Cl. B23k 37/02, 37/04, 9/02
U.S. Cl. 228—45 1 Claim



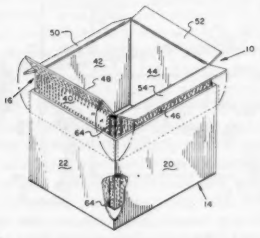
1. An apparatus for welding an inner and outer corner of a flange previously tack welded to a pipe comprising an outer first slide mounted for sliding vertically above the pipe, an outer second slide mounted on said outer first slide for sliding perpendicular to said outer first slide along the axis of the pipe, a welding torch carried on said outer second slide for welding the outer flange-pipe corner, means for regulating the stop position for said outer first slide, means for regulating the stop position for said outer second slide, an inner first slide provided to be vertically moved at the position adjacent to the flange, an inner second slide mounted on said inner first slide for sliding perpendicular to said inner first slide along the axis of the pipe, a welding torch carried on said inner second slide for welding the inner flange-pipe corner, means for regulating the stop position of the inner second slide on the inner first slide, and means, including a cam, for operatively connecting said outer first slide to the inner first slide to vertically position the welding torch connected to said inner second slide at said inner second slide at said inner flange-pipe corner.

3,880,341

BULK MATERIAL CONTAINER

Robert A. Bamburg; Farris N. Duncan, both of West Monroe, and Roger M. Floyd, Monroe, all of La., assignors to Olinkraft, Inc., West Monroe, La.

Filed May 28, 1974, Ser. No. 473,849
Int. Cl. B65d 13/00, 25/14
U.S. Cl. 229—23 R 19 Claims



1. A container comprising

a shell having an enclosed wall portion and a bottom portion,

a said shell being open at the top edge of the wall portion of the shell,

a liner having a wall portion telescoped within the wall portion of the shell,

a plurality of flaps integrally formed on the top edge of the wall portion of the liner and folded down over the top edge of the wall portion of the shell, and

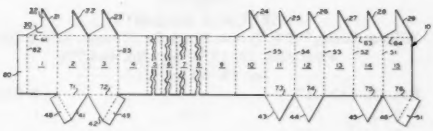
means for securing the plurality of flaps to the outside of the wall portion of the shell.

3,880,342

CONTAINER

Stephen H. Longo, Jr., 17 Campbell Dr., Parlin, N.J. 08859

Filed Sept. 13, 1973, Ser. No. 396,897
Int. Cl. B65d 5/00, 5/48
U.S. Cl. 229—27 13 Claims



1. A container formed of a unitary blank and providing at least one compartment of triangular cross-sectional configuration for receiving a product, comprising:

at least three body panels of generally rectangular configuration formed from said unitary blank, said body panels being folded into a triangular configuration thereby providing the walls of said compartment;

at least three end flaps formed from said unitary blank, each of said flaps provided with at least a portion which is generally V-shaped and of a composite triangular configuration including a base triangular portion and an outwardly extending triangular portion formed integrally along one of the legs of said triangular base portion, said end flaps being folded in a predetermined manner with respect to said body panels and being interleaved such that said outwardly extending triangular portion of each flap resides behind the base triangular portion of another flap and being interleaved such that said end flaps form a triangle having a mid-point defined by the intersection of lines drawn from each vertex of the triangle to the opposite side of the triangle, said interleaved end flaps providing one end of said compartment; and

a plurality of additional end flaps formed from said unitary blank with each end flap being of predetermined configuration, said additional end flaps being folded in a predetermined manner with respect to said body panels and being interleaved in a predetermined manner providing the other end of said compartment.

3,880,343

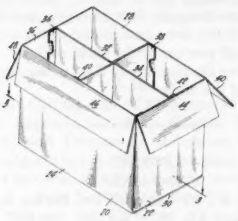
PARTITION STRUCTURE FOR CARTONS

Winston G. Rockefeller, Woodcliff Lake, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Feb. 16, 1973, Ser. No. 333,284
Int. Cl. B65d 5/48
U.S. Cl. 229—28 R 2 Claims

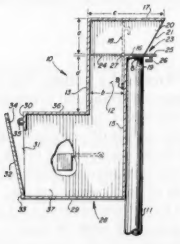
1. A carton comprising a plurality of interconnected side walls, a bottom connected to said side walls, and at least two angulated partition members engaging each other and attached to the inside of said side walls to form a plurality of cells, each of said partition members being essentially shaped

in a figure 8 and each being bonded to two of said four side walls opposed from each other to form at least seven rectangu-



lar cells within said interconnected side walls with at least four of said cells having essentially the same volume.

3,880,344
SECURED MAILBOX
William Earle, 102 E. Pebble Beach Dr., Tempe, Ariz. 85282
Filed Apr. 29, 1974, Ser. No. 464,796
Int. Cl. A47g *29/12*
U.S. Cl. 232—17 **8 Claims**



1. In a secured mailbox for receiving mail of different classes on a single delivery operation:

a. a vertical throat of rectangular horizontal cross section defined by a back wall, a pair of side walls and a front wall presenting a top edge;

b. said back and side wals extending above the level of said top edge a distance substantially equal to the distance between said back and front walls;

c. a top wall secured to upper edges of said back and side walls and extending forwardly of said back wall a distance substantially twice the distance between said back and front walls, said top wall presenting a front edge;

d. a door stop in the form of a flange extending forwardly of said front wall at the top edge of said front wall and having a front edge;

e. said side walls having portions extending forwardly beyond the top edge of said front wall and terminating in end edges extending between the front edges of said top wall and flange;

f. a flat door pivotally mounted on a horizontal pivot to said top edge of said front wall and comprising coplanar lower and upper door panels of substantially the same size and shape and defined by said pivot;

g. means for yieldably securing said door in a vertical position;

h. said lower door panel being of substantially the same size and shape as a horizontal cross section of said throat;

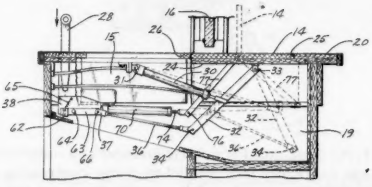
i. the top edge of said front wall, said side walls and said top defining an opening which mail is passed through as it is delivered to the mailbox, said upper door panel being dimensioned to close said opening when said door is in a vertical position;

j. a handle on the outer face of said upper door panel, and

k. a secured receptacle into which said throat opens at its lower end receiving mail from said throat,

said receptacle having a capacity at least twice the capacity of that portion of said throat above the lower edge of said lower door panel when said door is in vertical position.

3,880,345
PNEUMATIC DRAWER APPARATUS
Walter M. Becker, and Robert W. Becker, both of c/o Becker Manufacturing Co., Inc., Alta, Iowa 51002
Filed Oct. 15, 1973, Ser. No. 406,230
Int. Cl. E06b *7/32;* **A47b** *88/00*
U.S. Cl. 232—44 **11 Claims**



1. A drawer unit comprising:

a frame;

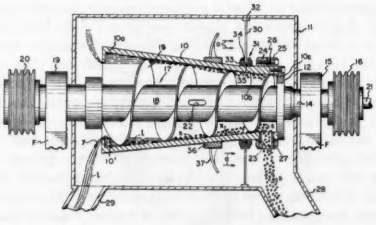
a drawer slideably mounted to the frame and having a first and a second position with respect to the frame;

a member rigidly attached to the frame having an open space therein which is aligned with said drawer in the second position of the drawer;

a door disposed in the open space and mounted on said member for opening or closing the open space;

means for moving said door to a closed position when said drawer is in the first position and moving said door to an open position when said drawer is in the second position, and said means for moving includes a lever rigidly connected to said door and operably and pivotally connected to said drawer.

3,880,346
CENTRIFUGE WITH MECHANISM FOR INHIBITING THE MIGRATION OF SEPARATED AIR-ENTRAINED SOLIDS
Dieter Horst Hopfe, Houston, Tex., assignor to Baker Perkins Inc., Saginaw, Mich.
Filed Mar. 25, 1974, Ser. No. 454,374
Int. Cl. B04b *1/20*
U.S. Cl. 233—7 **8 Claims**



1. In a centrifuge for separating particulate solids from liquid; a rotary centrifuge bowl having a tapering body section with a larger diameter end and a smaller diameter end; a drive for rotating said centrifuge bowl at a separating speed; a collecting housing surrounding said centrifuge and having a solids

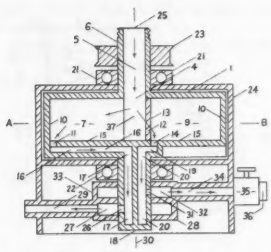
collecting portion and outlet adjacent the smaller diameter end and a liquid collecting portion and outlet adjacent the larger diameter end; a baffle, provided within said housing around said centrifuge bowl to substantially isolate the solids collecting portion, said baffle leaving a minimal clearance space around the rotary bowl; a supply conduit for delivering a solids-liquid slurry to the interior of said bowl; said bowl incorporating means for moving the solids toward the smaller diameter end to be discharged while the liquid proceeds to the larger diameter end; and an air flow director for moving air in a direction to inhibit the normal movement of air-entrained solid particles through the space.

3,880,347

INERTIA CENTRIFUGE

Samuel A. Kirk, Box 65, Pringle, S. Dak. 57773, and Clair F. Kirk, Box 869, Wheatland, Wyo. 82201

Filed Aug. 7, 1973, Ser. No. 386,326
Int. Cl. B04b *5/04*
U.S. Cl. 233—32 **1 Claim**



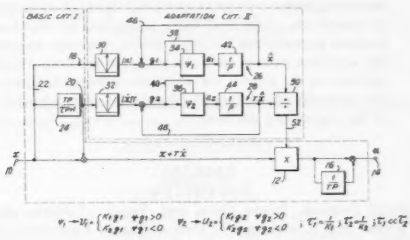
1. A device that utilizes inertia and centrifugal force for separating fluid mixtures comprising a rotatable separating chamber, a first tubular shaft providing an inlet to said chamber, a second tubular shaft providing at least two compartment outlets to said chamber, means for rotationally driving said shafts and chamber, said chamber comprising a cylinder arranged to rotate with said first and second tubular shafts, said cylinder being positioned intermediate the inlet portions of said first shaft and the outlet portions of said second shaft, said cylinder sectioned into at least one pocket by a wall, extending radially from cylinder center proximity to the circumference and joined to said cylinder internal ends and at the circumference, said wall providing a lagging and leading edge for said rotatable pocket, said first tubular shaft arranged to deliver pressurized mixture to the lagging edge of said pocket, a heavies separation fraction ejection port positioned at the circumference end of said lagging edge of said pocket, means for passing said heavies from said heavies ejection port to said second tubular shaft, a first compartment of said second shaft having its intake communicating with the interior of said chamber, said first compartment provided with a first discharge port, stationary heavies removal plumbing for receiving pressurized discharge from said first discharge port, a lights separation fraction ejection port positioned adjacent said leading edge of said pocket, a baffle extending perpendicularly from the said pocket leading edge, said baffle extending around and slightly by the periphery of said lights ejection port preventing mixture from directly entering said port, means for passing said lights from said lights ejection port to said second tubular shaft, a second compartment of said second shaft having its intake communicating with the interior of said chamber, said second compartment provided with a second discharge port, stationary lights removal plumbing for receiving pressurized discharge from said second discharge port, valve means operable to control said lights fraction discharge thereby controlling relative proportion of the separation fractions discharged and developing back-pressure to induce heavies flow from said heavies ejection port to said first compartment of said second tubular shaft.

3,880,348

VARIABLE STRUCTURE ADAPTIVE CONTROLLER

Adnan Salihbegovic; Bozidar Matic; Svetozar Zimonjic; Faruk Hadziomerovic, all of Sarajevo, Yugoslavia; Alexandr Michailovich Shubladze, Moscow, U.S.S.R.; Alexei Pavlovic Okunev, Moscow, U.S.S.R.; Stanislav Vasilyevich Yemeljanov, Moscow, U.S.S.R., and Nataly Yevgenyevna Kostyleva, Moscow, U.S.S.R., assignors to Energoinvest-Istrazivacko-razvojni Centar za automatiku, Sarajevo, Yugoslavia and IAT-Institut po problemom upravlenia, Moscow, U.S.S.R.

Filed June 3, 1974, Ser. No. 476,036
Int. Cl. G05b *17/02, 13/02*
U.S. Cl. 235—150.1 **18 Claims**



1. A variable structure adaptive controller for compensating variations of gain and/or time constant parameters of an apparatus or process to be controlled, said controller comprising basic circuit means for the preparation of error information and an error signal and an adaptation circuit means which is coupled to said basic circuit means and provides for the adaptation of multiplication coefficients as a function of the derivation values of the error signal and of the differential of said error signal, said circuit means providing for, in a very wide range of changes in said parameters, compensating the variations of said parameters.

3,880,349

CYLINDRICAL CALCULATOR

James Richard Harte, 10 W. Concord, Kansas City, Mo. 64112

Filed Sept. 26, 1973, Ser. No. 400,844
Int. Cl. G06c *3/00*
U.S. Cl. 235—87 R **2 Claims**

1. A calculator comprising:

a cylindrical core member carrying a data table thereon arranged in longitudinally extending columns and circum-

ferentially extending rows, said data representing solutions;

said core member projecting axially in both directions from said table to opposed end portions, each of said end portions having retaining means thereon and each end portion bearing data representing first variables spaced from but aligned with said columns;

an opaque cylindrical sleeve rotatably mounted on said core member and having a longitudinal window for alignment with a selected first variable and the corresponding column, said sleeve bearing data thereon representing second variables spaced along said window commensurate with the spacing of said rows;

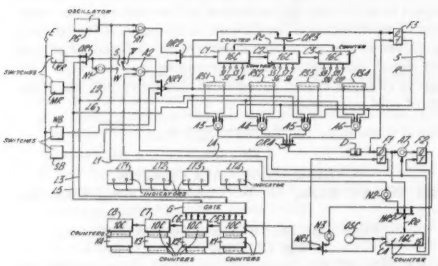
an opaque outer tube slidably and rotatably mounted on said sleeve having a circumferentially extending window for revealing a selected second variable and operable in conjunction with said window of the sleeve to reveal a solution on said core member, said tube being of lesser length than said core member to reveal said first variable thereon selected by said sleeve while being of such length to completely cover said table regardless of said tube's location between the retaining means, whereby to permit the selection of two variables, one on the core member and one on the sleeve, for which the solution relating the two variables will be revealed by the intersecting windows of the sleeve and the tube.

3,880,350

TAXIMETER

Katumi Iwatani; Takao Oota, and Yutaka Tabaru, all of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto and Osaka Motor Co., Ltd., Neyagawa-shi, Osaka, both of, Japan

Filed Nov. 22, 1972, Ser. No. 308,761
Claims priority, application Japan, Nov. 24, 1971, 46-94276
Int. Cl. H03k *21/06*
U.S. Cl. 235—92 DN **18 Claims**



1. A taximeter, comprising

a taxi fare counter capable of being incremented for indicating a taxi fare;

first pulse generating means for generating a distance related pulse for each predetermined distance travelled by a taxi;

second pulse generating means for generating clock pulses at a predetermined rate;

first counter means having a fixed counting cycle for counting said clock pulses, wherein said first counter means produces a first counter output signal at the conclusion of each fixed counting cycle, said fixed counting cycle and said predetermined rate of clock pulses being related to a predetermined taxi speed such that said first counter means will count through at least one fixed counting cycle between successive distance related pulses generated by said first pulse generating means when taxi speed falls below the predetermined taxi speed;

second counter means for counting said distance related pulses and said first counter output signals, said second counter means producing a second counter output signal whenever a predetermined count is achieved;

first means for applying said first counter output signals to said second counter means;

second means for applying said distance related pulses to said second counter means;

means operable to reset said first counter means upon application of a distance related pulse to said second counter means at least during an interval initiated at an incrementation of the taxi fare counter and terminated at the next successive second counter output signal; and,

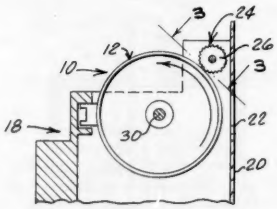
means responsive to said second counter output signals for incrementing the taxi fare counter.

3,880,351

DIGITAL COUNTERS AND ODOMETERS

Peter D. Bogart, 2338 Bronson Hill Dr., Hollywood, Calif. 90068

Filed May 22, 1973, Ser. No. 362,751
Int. Cl. G01c *22/00*
U.S. Cl. 235—95 R **1 Claim**



1. In combination with a digital counter consisting of two or more movable wheels mounted on a common shaft, rotation of said shaft to effect movement of said wheels with each said wheel being movable at a different ratio of movement with respect to the other of said wheels with there being a single said wheel movable at the slowest ratio, indicia located on the periphery of said slowest moving wheel, an in line section of said wheels being observable through a viewing window formed within a housing, said wheels being rotatably mounted with respect to said housing, the improvement comprising:

an obliteration means mounted adjacent said slowest moving wheel, said obliteration means to effect obliteration of said indicia upon said slowest moving wheel after said indicia is moved across said viewing window and no longer observable therethrough, wherein said obliteration means comprises;

a single crushing wheel rotatably mounted upon said housing, said crushing wheel having a toothed periphery, said toothed periphery of said crushing wheel being in tight frictional contact with said slowest moving wheel, whereby as said slowest moving wheel is moved said crushing wheel is moved resulting in said toothed periphery obliterating the portion of said indicia which passes said viewing window.

3,880,352

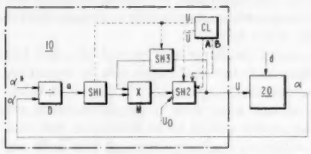
METHOD AND DEVICE OF SAMPLING CONTROL

Koichi Ishida, and Kozo Yoneda, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Apr. 24, 1974, Ser. No. 463,719
Claims priority, application Japan, Apr. 25, 1973, 48-47436
Int. Cl. G05b *21/02*
U.S. Cl. 235—150.1 **8 Claims**

1. A sampling control method comprising the steps of providing a signal corresponding to a quotient between the actual value of a controlled variable at a certain instant and a desired value of the controlled variable, multiplying said signal by a manipulated variable signal obtained in the previous sampling

period, and sending the product signal thus obtained to a controlled system as a new manipulated variable signal in the



succeeding sampling period, whereby the actual value of the controlled variable in the controlled system is automatically equalized to the desired value of the controlled variable.

3,880,353

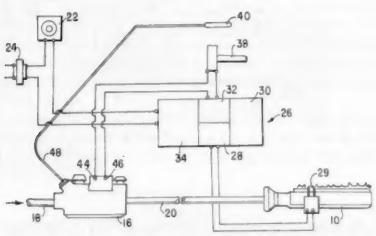
HEATING SYSTEM AND SAFETY VALVE

Hugh J. Tyler, Santa Ana, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 1, 1973, Ser. No. 411,871

Int. Cl. F24f *5/00*

U.S. Cl. 236—9 R **10 Claims**



1. A heating system comprising a burner;

means for supplying fuel from a source to the burner;

thermostat means for controlling the fuel supplying means;

a safety valve for interrupting the fuel supplying means;

solely mechanical means including bulb means containing an expandable fluid positioned for sensing an overheat condition of the heating system and for operating the safety valve,

means for maintaining the mechanical means in an operated position, and

manual means for resetting the mechanical means to an unoperated condition.

3,880,354

METHOD AND APPARATUS FOR CONTROLLING HEAT EFFECT IN METAL CUTTING OPERATIONS

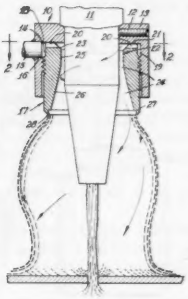
Charles A. Van Horn, Country Club Hills, Ill., assignor to Chemetron Corporation, Chicago, Ill.

Division of Ser. No. 211,217, Dec. 23, 1971, Pat. No. 3,815,883. This application Nov. 14, 1973, Ser. No. 415,838

Int. Cl. B05b *15/00*

U.S. Cl. 239—132.3 **5 Claims**

1. A coolant discharging nozzle comprising an annular body having a liquid inlet port, an annular plenum chamber communicating with said port, a vortex generating surface adapted to receive a liquid flowing from said plenum chamber through at least one passage between the plenum chamber and the interior of the nozzle and a contoured surface continuous with said vortex generaating surface, said contoured surface having a portion which tapers away from the axis of the nozzle to form the boundary of a hollow frustrum having its base at the



outlet of the nozzle for shaping and directing a swirling annular sheet of liquid from the nozzle onto a workpiece.

3,880,355

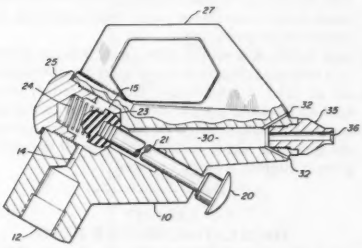
AIR BLOW GUN

James H. Larson, Anoka, and William D. Vork, Minneapolis, both of Minn., assignors to Graco Inc., Minneapolis, Minn.

Filed Apr. 8, 1974, Ser. No. 458,968

Int. Cl. B05b *1/14*

U.S. Cl. 239—288.3 **13 Claims**



1. An apparatus for controllably directing a stream of pressurized air by actuation of an internal air valve, comprising:

a. an inlet passage adapted for connection to the source of pressurized air;

b. an orifice passage of cross sectional area 1/25th to 1/50th of said inlet passage, communicating with the interior end of said inlet passage and having a length of at least 3 times its diameter;

c. a valve chamber communicating with said orifice passage, said valve chamber housing said internal air valve;

d. an outlet nozzle having a nozzle passage for directing said air stream and having means for connecting said passage to said valve chamber, the volume of said nozzle passage being substantially equal to the volume of said valve chamber;

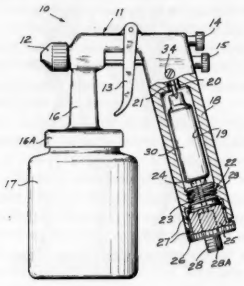
e. a plurality of air shield passages circumferentially arranged around said nozzle passage and radially and forwardly outwardly inclined from said nozzle passage axis, said shield passages communicating between said internal air stream and the exterior of the apparatus; and

f. means for activating said internal air valve.

3,880,356
PORTABLE PRESSURIZED PAINT GUN

Estal D. Chandler, 1205 N. Cleveland, Cameron, Tex. 76520

Filed Mar. 8, 1973, Ser. No. 339,331
Int. Cl. B05b 7/02
U.S. Cl. 239—308 2 Claims

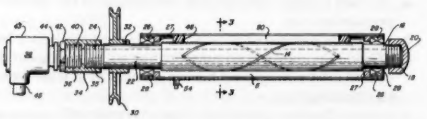


1. A portable, dual, pressurized paint gun, which paint gun comprises;
   a. a housing,
      1. a handle on said housing,
      2. a valved passage through said housing,
      3. a paint spray nozzle on said housing,
      4. an air hose connected to said housing,
   b. said handle having a chamber formed therein to receive a gas cartridge,
      1. a closure forming a surge and dispensing control means within said handle to selectively regulate the flow of paint and pressure therethrough,
   c. a paint container connected in fluid tight communication with the passage in said housing, so upon actuation of said controls the quantity of paint dispensed from said container can be regulated,
   d. said handle is provided with a gas cartridge piercing pin,
      1. a threaded closure for said piercing operation,
   e. an air inlet control means incorporated in the passage leading from the gas cartridge chamber to the spray gun controls for the purpose of controlling the air volume to the spray gun and to completely close off the air when the paint container is being changed.

3,880,357
OSCILLATING SHOWER HEAD

Stephen J. Baisch, 809 Hyland Ave., Kaukauna, Wis. 54130

Filed May 23, 1974, Ser. No. 472,554
Int. Cl. B05b 1/02
U.S. Cl. 239—380 10 Claims

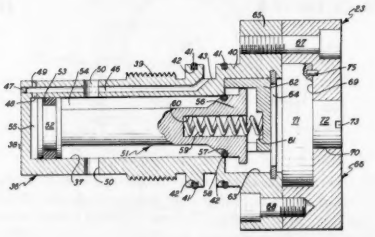


1. An oscillating shower head which includes, in combination,
   a stationary cylindrical outer tube having a continuous wall substantially enclosing a chamber,
   an elongated discharge nozzle in the continuous wall of said outer tube,
   a rotatable cylindrical inner tube having a continuous wall substantially enclosing a passageway,
   opposite sets of sealing bearing assemblies mounting said inner tube in spaced relationship to the continuous wall of said outer tube,
   a helical groove in the continuous wall of the inner tube communicating the passageway of the inner tube with the chamber of the outer tube,
   an elongated bar positioned between continuous wall portions of said inner and outer tubes, said bar having a convex side to engage the inside radius of the outer tube and an opposite concave side to engage the outside radius of the inner tube,
   an elongated discharge slot in said bar, said bar positioned so that said bar discharge slot is registered with said elongated discharge nozzle in the outer tube,
   means on said inner tube to engage rotating means, and
   inlet means for a fluid to be delivered into said inner tube for oscillating discharge through said helix and registered slots.

3,880,358
COOLANT DISTRIBUTION AND CONTROL SYSTEM FOR METAL ROLLING MILLS AND THE LIKE

Edward J. Schaming, P.O. Box 1070, Butler, Pa. 16001

Continuation-in-part of Ser. No. 388,497, Aug. 15, 1973, abandoned. This application Feb. 8, 1974, Ser. No. 440,763
Int. Cl. B05b 1/14
U.S. Cl. 239—551 21 Claims



1. In a liquid coolant distribution system or the like, a coolant header having a chamber and having coolant intake means, plural spaced coolant discharge units plugged removably into the header along its length and each having a coolant discharge orifice means and a coolant inlet, said coolant inlet being disposed in the chamber of the header, pressure-responsive valve means in each coolant discharge unit to regulate the flow of coolant from each unit independently of other units on the header, and means to supply a pressurized control fluid to each discharge unit for activating said valve means of each unit in accordance with a demand for coolant from such unit.

3,880,359
APPARATUS FOR DECOKING A DELAYED COKER

Anton R. Novy, Johnson City, Tenn., assignor to Great Lakes Carbon Corporation, New York, N.Y.

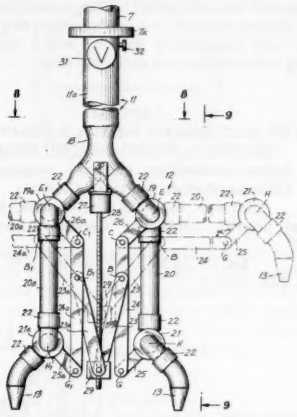
Division of Ser. No. 238,304, March 27, 1972, Pat. No. 3,836,434. This application Apr. 24, 1974, Ser. No. 463,581
Int. Cl. C10c 3/18; B05b 1/14, 15/08
U.S. Cl. 239—565 3 Claims

1. An apparatus used for removing coke from a delayed coking container by a series of substantially cylindrical and vertical hydraulic cuttings of the coke after a substantially vertical and central pilot hole is first cut through the entire height of the coke in the container, said removal means including:
   Water nozzles capable of directing water in jet streams in a substantially vertical and downward direction against the top surface of the coke;
   a central drill stem, which can be provided with water under pressure, capable of rotation and vertical movement

within the container, to which stem the jet nozzles are operatively mounted and coupled; and

mechanical and hydraulic linking means between the water nozzles and the central drill stem for radially extending the cutting action of the jet streams while simultaneously maintaining the jet nozzles in about the same substantially vertical direction, thus enabling each subsequent cylindrical hydraulic cutting in the series to enlarge the diameter of the central hole in the container by the total radial movement of the nozzles between each respective cutting in the series;

the vertical and rotary movement of the drill stem, the radial extension of the linking means, and the hydraulic action of the jet streams all thus coacting in the removal of the coke.

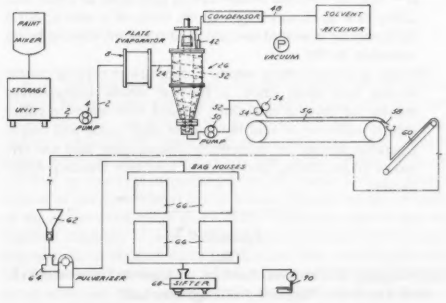


3,880,360

METHOD OF PREPARING HOMOGENEOUS THERMOSETTING POWDER PAINT COMPOSITION

Stephen C. Peng, Utica, and Denis E. Wilemski, Warren, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 5, 1973, Ser. No. 422,060
Int. Cl. B02c *19/12*
U.S. Cl. 241—3 **24 Claims**



1. A method of preparing a powder paint composition comprising:

A. introducing a liquid composition comprising a solution of inert solvent and a copolymer containing crosslinkable functional groups, having a glass transition temperature in the range of 40° to 90°C and a number average molecular weight of between about 1,000 to about 15,000, into an evaporating zone adapted to heat said solution so as to evaporate said inert solvent;

B. heating said solution while confining the same within said evaporating zone to a temperature

1. above the melting point of said copolymer but below the point at which degradation occurs;

2. above the temperature at which said inert solvent begins to vaporize,

thus inducing turbulent flow of said solution within said evaporating zone and thereby maintaining an intimate homogeneous mixture of the vapors of the volatile components of said solution and the dispersed particles of molten copolymer;

C. passing said homogeneous mixture from said evaporating zone into a separating zone and, while maintaining the temperature within said separating zone above the melting point of said copolymer,

1. causing said solvent vapor to be removed from said separating zone; and

2. mechanically driving said nonvolatile components while in the molten state from said separating zone;

D. cooling said non-volatile components to form a solid material; and

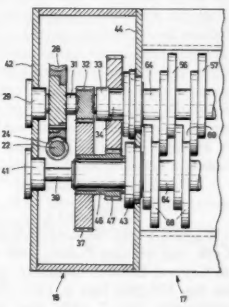
E. pulverizing said solid material to form a homogeneous powder.

3,880,361

APPARATUS FOR COMMINUTING TRASH

Werner Schwarz, Sindelfingen, Germany, assignor to Technisches Entwicklungs Buro, Ltd., Addison, Ill.

Continuation of Ser. No. 180,687, Sept. 15, 1971, abandoned. This application Oct. 1, 1973, Ser. No. 402,585
Claims priority, application Germany, Oct. 22, 1970, 2051756; Apr. 10, 1971, 2117519
Int. Cl. B02c *18/20, 18/24*
U.S. Cl. 241—36 **16 Claims**



1. Apparatus for comminuting trash comprising:

a. a motor:

b. at least two parallel shafts;

c. means for rotatably supporting said shafts;

d. gearing connected between said motor and said shafts for rotating said shafts in opposite directions and at different speeds with respect to one another;

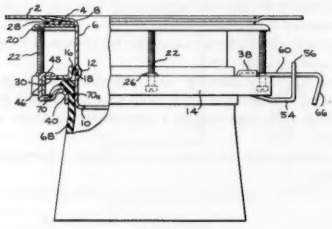
e. means for reversing the rotation of both of said shafts;

f. a plurality of solid disc-shaped blades disposed on each of said shafts and secured thereto for rotation therewith, at least some of the blades one each of said shafts being spaced from adjacent blades on the same shaft with the blades on one shaft extending into the spaces between blades on the other shaft;

g. the peripheral contour of each of said blades comprising a cutting tongue portion extending in the direction of rotation and proceeding in the opposite direction in a continuous, smooth, inward, spiral curvature to a step region,

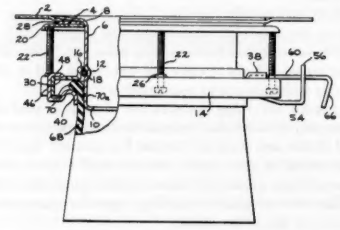
said step region comprising a sickle-shaped recess portion receding from a cutting tongue portion to said spiral curvature.

3,880,362
WASTE DISPOSER APPARATUS
Lauren W. Guth, and Mahlon T. Roy, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.
Division of Ser. No. 305,090, Nov. 9, 1972, Pat. No. 3,843,066.
This application Aug. 7, 1974, Ser. No. 495,306
Int. Cl. B02b *7/02*
U.S. Cl. 241—100.5 **2 Claims**



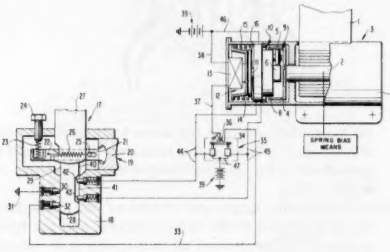
1. A waste disposer apparatus of the type normally suspended beneath the drain opening of a sink comprising: an annular support structure adapted to be securely fixed to a sink substantially in line with the drain opening, said annular support structure including: a first hinge member and a first locking means having an aperture; a mounting ring arranged for cooperation with said annular support structure, said mounting ring including: a second hinge member cooperable with said first hinge member; and a second locking means having a tab integral with said mounting ring, said tab having an opening therein for receiving a prying tool therethrough to engage said annular support structure and force said annular support structure and said mounting ring into assembled relation; and securing means engaging said first and second locking means for holding said annular support structure and said mounting ring in assembled relation, said securing means comprising a member rotatably mounted to said tab, said member including a hook for engaging said aperture.

3,880,363
WASTE DISPOSER APPARATUS
Lauren W. Guth, and Mahlon T. Roy, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.
Division of Ser. No. 305,090, Nov. 9, 1972, Pat. No. 3,843,066.
This application Aug. 7, 1974, Ser. No. 495,307
Int. Cl. B02b *7/02*
U.S. Cl. 241—100.5 **3 Claims**



1. In a waste disposer apparatus of the type normally suspended beneath the drain opening of a sink; an annular support structure adapted to be securely fixed to the sink substantially in line with the drain opening, said annular support structure comprising: a first hinge member; and a first locking means including an aperture in said annular support structure; a mounting ring arranged for cooperation with said annular support structure, said mounting ring comprising: a second hinge member engaging said first hinge member; and a second locking means including a hook cooperating with said aperture of said locking means; and independent securing means engaging said first and second locking means for holding said annular support structure and said mounting ring in assembled relation, said independent securing means including a rod engaging said hook on said mounting ring.

3,880,364
SAFETY BELT SYSTEM WITH A WIND-UP ROLLER HAVING A SPRING-LOADED SHAFT
Rudolf Andres, Sindelfingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany
Filed Apr. 26, 1973, Ser. No. 354,783
Claims priority, application Germany, Apr. 27, 1972, 2220669
Int. Cl. A62b *35/02;* **B65h** *75/48*
U.S. Cl. 242—107.4 **18 Claims**

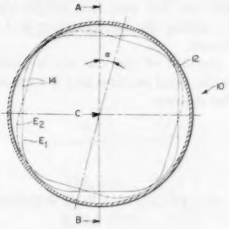


1. A safety belt system comprising:
a safety belt,
belt wind-up roller means for winding-up at least one end of said safety belt, said belt wind-up roller means including a shaft on which the safety belt is wound,
servo-drive means for reversibly driving said shaft, thereby providing one of winding-up said safety belt on said shaft and winding-off said safety belt from said shaft, and
control means for controlling said servo-drive means such that said servo-drive means drives said shaft to force said safety belt at all times against the body of a user under a substantially constant tension, said constant tension being tolerable to the user,
wherein said servo-drive means comprises an electric motor having two shaft ends, a friction wheel transmission means for driving said shaft of said belt wind-up roller means with one of said two motor shaft ends, and disengageable means for selectively disengaging said electric motor from driving said shaft of said belt wind-up roller means.

3,880,365
MILL
Erich Eigner, Radenthein, Austria, assignor to Osterreichisch-Amerkianische Magnesit Aktiengesellschaft
Filed Oct. 15, 1973, Ser. No. 406,665
Claims priority, application Austria, Oct. 23, 1972, 9023/72; July 19, 1973, 6354/73
Int. Cl. B02c *17/22*
U.S. Cl. 241—182 **17 Claims**

1. A mill having a cylindrical shell and a plurality of liner plates mounted within said shell and forming the interior of the mill, said interior having a polygonal cross section formed

of sides with rounded corners, a plurality of grinding elements within said interior, the maximum dimension of each grinding element being a small fraction of the length of each of said sides, said interior formed solely by said liner plates which are arranged in a plurality of adjacent annular courses aligned one



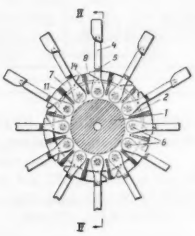
behind the other in the longitudinal direction of the shell, at least a portion of said annular courses being angularly displaced about the shell axis from the annular courses adjacent thereto, and at least some of said liner plates having inside surfaces being inclined toward the axis of the shell and in the direction of flow of the material to be ground.

3,880,366

BRAKING COLLAR FOR HINGED BEATER ARMS OF A HAMMER MILL, USED ESPECIALLY FOR GRINDING OF FUEL

Josef Loevenich, Leverkusen, Germany, assignor to Babcock & Wilcox Limited, London, England

Filed Oct. 5, 1973, Ser. No. 404,056
Int. Cl. B02c *13/04, 13/06*
U.S. Cl. 241—194 **3 Claims**



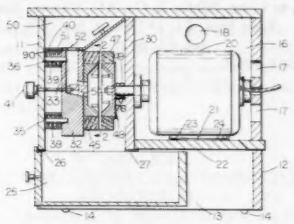
1. A braking collar to prevent the rythmic movement of hinged beater arms with attached beater heads of a hammer mill, especially when used for grinding of fuels, said braking collar consisting of inner and outer segments, the outside strips of cylindrical surfaces on the outer segments being pressed against lugs projecting from the beater arms under the action of the centrifugal force; characterized by, the relation of the radial-axial mean plane of the external segment and the internal segment in which the segmental plates of the outer segment have slanted surfaces that are flat, rectangular and strongly spread outwards, while the segmental plates of the inner segments have correspondingly slanted surfaces that are flat, rectangular and tapered to the outside; the said surfaces being arranged to each other so, that under centrifugal action said outer surface segmental plates together with said inner surface segmental plates form closed rings; and, that the strips of the cylindrical outer surface of the segmental plates have, in the circumferential direction of the braking collar, an adequate length so that their two ends extend considerably beyond the contact surface of the lugs on the beater arms.

3,880,367

GRAIN MILL

Herman Jack Grover, Phoenix, Ariz., assignor to Suncrest Products, Inc.

Filed Sept. 14, 1973, Ser. No. 397,448
Int. Cl. B02c *7/06, 7/18*
U.S. Cl. 241—248 **8 Claims**



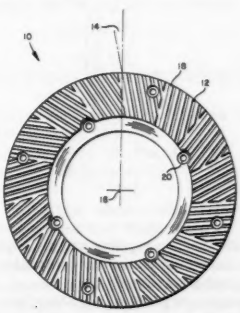
1. In apparatus of the character described for grinding or comminuting grain and the like, the combination which comprises a pair of mutually facing and respectively rotatable and relatively fixed grinding and comminuting elements adapted to cooperate at a grinding plane or interface, each of said elements comprising a centrally located circular cutting burr having cutting edges extending at a small angle with respect to a radius of the burr and adapted to lie substantially in said plane, said cutting edges being so directed as to tend to impel the material being ground or comminuted radially outward in said plane, each of said elements comprising also an annular abrasive grinding stone surrounding said burr and having its grinding surface arranged to lie substantially flat in said plane to receive cut material from the burr and grind said material between said grinding surfaces, said rotatable element being fixed to a driving shaft, said relatively fixed element being supported on a backing member which is axially movable with respect to said plane, resilient means for urging said backing member and relatively fixed element towards the plane, and adjustable means for resisting said resilient means, thereby to control the relative position of the relatively fixed element with respect to the rotatable element.

3,880,368

PULP REFINER ELEMENT

John B. Matthew, West Stockbridge, Mass., assignor to Beloit Corporation, Beloit, Wis

Filed Mar. 12, 1973, Ser. No. 340,027
Int. Cl. B02c *7/12*
U.S. Cl. 241—296 **16 Claims**



1. An abrasion resistant, hydrolytically stable fiber refining element for use in a pulp refiner having at least its fiber contacting surfaces comprising a thermoplastic having a modulus

of elasticity between about 0.1×10^6 psi to about 2.0×10^6 psi and having a creep limit temperature above the operating temperature within the refiner.

3,880,369

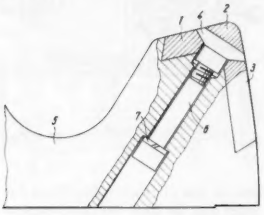
IMPACT STRIP FOR IMPACT PULVERIZERS

Ferdinand Kunstovny, Bruck, Mur; Gottfried Mayerböck, and Johann Rossmann, both of Kapfenberg, all of Austria, assignors to Gebr. Böhler & Co. AG, Vienna, Austria

Filed Sept. 21, 1973, Ser. No. 399,433

Int. Cl. B02c *13/28*

U.S. Cl. 241—300 **8 Claims**



1. An impact strip for impact pulverizers having an impact edge with two sides defining an apex region, which is covered with plates of sintered hard metal, said impact strip having a recess at both sides thereof, a plurality of lateral sintered hard metal plates mounted in said recess at both sides of said impact edge, a plurality of bolts threadably mounted on said impact strip, each bolt having a head portion which overlaps the adjacent lateral plates and thus holds them in position in said recess.

3,880,370

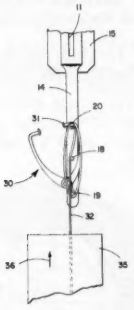
JIG DEVICE FOR WRAPPING AND PACKAGING EAR SETS

Alvin L. Keister, Altadena; Joseph A. Machuszek, Lennox, and Joseph M. Machuszek, Manhattan Beach, all of Calif., Flight Service Industries, Inc., Bensenville, Ill., assignors to Flight Services Unlimited, Inc., El Segundo, Calif. and Flight Services Industries, Inc., New York, N.Y., part interest to each

Filed Nov. 26, 1973, Ser. No. 418,809

Int. Cl. B65b *67/04*

U.S. Cl. 242—1 **5 Claims**



1. A jig device for wrapping and packaging ear sets having audio lines extending therefrom comprising:

an elongated head portion,

an elongated arm portion extending from the head portion in a direction substantially parallel to the longitudinal axis of the head portion,

a plurality of dowels extending ourwardly from said arm portion, said dowels being arranged in a line substantially parallel to the longitudinal axis of said arm portion, the dowel closest to said head portion running from said arm portion at an angle towards said head portion, the remaining dowels running in a direction substantially normal to one surface of said arm portion, and

means for vertically adjusting the position of said device comprising a longitudinal slot formed in said head portion, a support board, bolt means fitted through said board and the slot and nut means engaging said bolt means for setting the head portion in a selected position on said board,

whereby a portion of the ear set is rested on the dowel closest to the head portion and the earset line is wrapped around the dowels.

3,880,371

PROCESS AND APPARATUS FOR WINDING YARNS AND THE LIKE

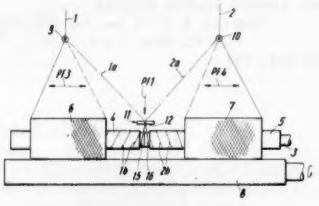
Peter Landenberger, Hanau; Georg Treutel, and Heinz Schüttrichkeit, both of Kelsterbach, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 29, 1973, Ser. No. 392,836

Claims priority, application Germany, Sept. 22, 1972, 2246721

Int. Cl. B65h *54/02, 65/00*

U.S. Cl. 242—35.5 R **8 Claims**



1. Process for simultaneously attaching two yarns on a bobbin-winding means which rotates at a peripheral velocity in excess of 1000 meters per minute and has two cores detachably fitted thereon in end-to-end relationship to form two yarn packages axially spaced along a common axis in a winding zone of each core, which comprises

a. feeding said yarns through separate stationary guides positioned above the winding zone of each core;

b. leading the two yarns together through a movable guide means positioned above the abutting ends of the two cores, said guide means being movable in and out of engagement with said two yarns;

c. attaching the two yarns on the rotating bobbin-winding means in the region of the abutting ends of the cores;

d. pulling the movable guide means out of engagement with the two yarns; e. moving the two yarns in opposite directions while winding each yarn on its respective core; and f. reciprocating each yarn by means of traverse motions in their respective winding zones thereby forming said two yarn packages.

3,880,372
DEVICE FOR STORING PAPER SUPPLY ROLLS IN COPYING APPARATUSES

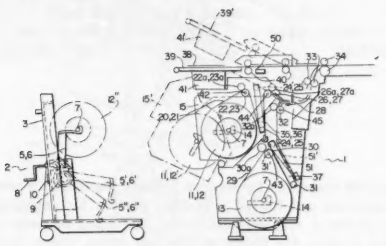
Horst Witte, Wiesbaden-Biebrich, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Oct. 22, 1970, Ser. No. 83,006

Claims priority, application Germany, Aug. 28, 1970, 2042752

Int. Cl. B65h *19/12*

U.S. Cl. 242—55 **1 Claim**



1. A storage device for rolls of reproduction material of different widths comprising at least three supply rolls with two of said rolls being narrower than the third,

means mounting said narrower rolls with their axes substantially in alignment with each other,

means mounting the third and widest roll parallel to the two narrower rolls, and

draw-off rollers, for the two narrower supply rolls, in the form of hollow shafts having a common driving shaft constantly revolving therein, and clutch means for selectively connecting said driving shaft to either of said hollow shafts,

said device including a stationary component and a movable component, the latter comprising a movable carriage means for conveying the rolls and including rocker arms for lifting and inserting the rolls into the stationary component.

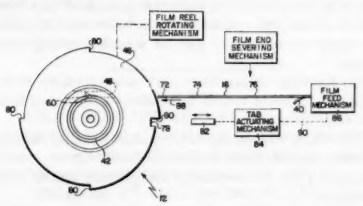
3,880,373
FILM REEL WITH A CORDAL CONNECTION SLOT

Gerald H. Cook, Lynnfield, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 253,063, May 15, 1972, Pat. No. 3,814,344. This application Feb. 8, 1974, Ser. No. 440,803

Int. Cl. B65h *19/20*

U.S. Cl. 242—56 R **7 Claims**



1. An automatic film loading apparatus for use in conjunction with a film reel having a slot into which one end of a film strip is inserted and means for retaining such one end of such film strip in such slot, said apparatus comprising:

means for rotating such film reel about its axis;

means located on such film reel in a predetermined angular relationship with such slot;

means, engageable with said angularly located means, for stopping the rotation of such film reel when engagement is made for correctly positioning such film reel;

means, responsive to said engagement, for feeding film to such film reel when said angularly located means has been engaged and such film reel has been correctly positioned;

means for introducing one end of such film strip into such slot within such film reel;

means for feeding such one end of such film strip into such slot until such one end is retained by such retaining means in such slot;

means for rotating such film reel for winding a predetermined amount of unexposed film on such film reel; and means for severing the remaining end off such film strip when said predetermined amount of film has been wound upon such film reel.

3,880,374
APPARATUS FOR CONTINUOUSLY WINDING LENGTHS OF MATERIAL

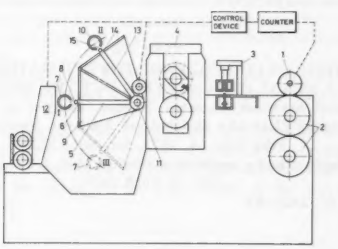
Lutz Reiser, Ortsstrasse 21, D-6122 Erbach im Odenwald, Germany

Filed May 23, 1973, Ser. No. 363,251

Claims priority, application Germany, June 19, 1972, 2229618

Int. Cl. B65h *17/00*

U.S. Cl. 242—67.1 R **11 Claims**



1. Apparatus for winding lengths of material comprising at least two spaced take-up drums each adapted to have lengths of material wound thereabout; and guide means disposable proximate to said take-up drums for receiving each length of material and selectively guiding the same towards one of said take-up drums, at least one of said guide means and said take-up drums being reciprocally displaceable in position, whereby lengths of material can alternately be guided towards one of said respective take-up drums in each of the relative positions of said guide means and take-up drums.

3,880,375
SENSOR CONSTRUCTION FOR COIL STOCK CRADLES AND THE LIKE

Omer G. St. Sauveur, Holyoke, Mass., assignor to Carl G. Peterson Co., Inc., Esmond, R.I.

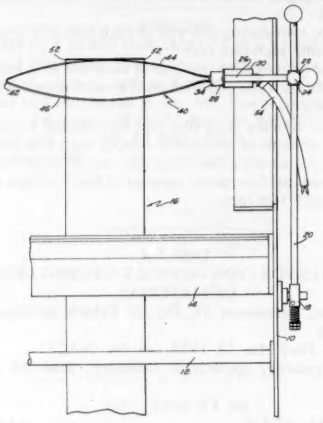
Filed Jan. 2, 1974, Ser. No. 429,503

Int. Cl. B21c *47/16*

U.S. Cl. 242—78.7 **6 Claims**

1. In apparatus of the type wherein strip stock is intermittently fed, said intermittent feed being actuated by sensing means, said sensing means extending transversely of said strip and being positioned so as to be engaged thereby when a predetermined minimum slack exists in said strip, said sensing means comprising a first elongated rod portion extending transversely of said strip and extending substantially beyond the opposite edges thereof, a second rod portion also extending transversely of and substantially beyond the opposite edges of said strip, means mounting said rod portions so that said first portion only is engaged by said strip when the prede-

termined minimum slack exists therein, said second portion being adjacent to but spaced from said strip when the latter



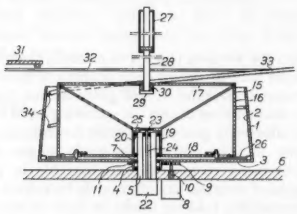
engages said first portion, whereby if said first portion breaks, said second portion will actuate said intermittent feed.

3,880,376

METHOD OF COILING STRIP-FORMED MATERIAL AND A MEANS FOR CARRYING OUT THE METHOD

Lennart Svensson, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Feb. 14, 1973, Ser. No. 332,381
Claims priority, application Sweden, Mar. 3, 1972, 2707/72
Int. Cl. B65h *54/80*
U.S. Cl. 242—83 **7 Claims**



1. Method of coiling strip-formed material which comprises leading the material tangentially into and coiling it inside a first hollow drum rotating at such a speed that its peripheral speed is substantially the same as the speed of the material, suddenly ceasing the supply of material, and thereafter coiling the material around a second drum arranged inside the first drum, said second drum being stationary or rotating at a low speed.

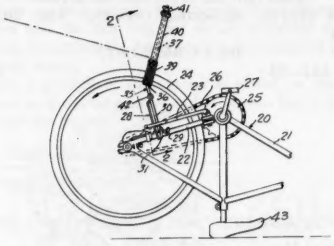
3,880,377

WINDING DEVICE FOR KITES

Clark W. Morris, II, 3025 Becerra Way, Sacramento, Calif. 95821

Filed Feb. 19, 1974, Ser. No. 443,616
Int. Cl. B65h *17/46*
U.S. Cl. 242—86.5 R **4 Claims**

1. In combination with a bicycle of the type having a frame and a wheel and manually operable means for rotating the wheel a device for winding in kites and the like comprising a support member having a saddle for engaging a portion of the bicycle frame, a lug affixed to said support member, a resilient band engaging said lug and saddle detachably securing said support member to said bicycle frame, a rod extending from said support member and including sections arranged angu-



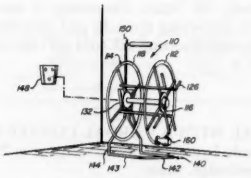
larly with respect to each other, a sleeve mounted for rotation on said rod and having a knurled portion for engaging the bicycle wheel, said sleeve including a reduced diameter cylindrical portion for receiving the kite string and a securing element for maintaining the sleeve on said rod.

3,880,378

CORD STORAGE REEL ASSEMBLY

William G. Ballenger, Highland Park, Ill., assignor to Central Specialties Co., Chicago, Ill.

Continuation-in-part of Ser. No. 192,374, Oct. 26, 1971, Pat. No. 3,698,656. This application Sept. 20, 1972, Ser. No. 290,772The portion of the term of this patent subsequent to Oct. 17, 1989, has been disclaimed.
Int. Cl. B65h *75/40*
U.S. Cl. 242—96 **13 Claims**



1. A storage reel for cords and the like comprising in combination,

wheels including a front wheel and a rear wheel,

spacer means positioned for holding each of said front and rear wheels and spaced apart in horizontal alignment,

the space between said pair of wheels forming a storage core,

means forming an auxiliary reel, said auxiliary reel being carried adjacent to said front wheel and spaced from said storage core,

said auxiliary reel being diametrically smaller than the diameter of said front and rear wheels,

a support plate for mounting said storage reel to a support surface,

said support plate being provided with a shaft fixedly secured thereto and in normal relation therewith,

said shaft being received through the central portion of said front and rear wheels, whereby said storage reel assembly is rotatably mounted on said shaft,

securing means for securing said storage reel in rotary mounted position on said shaft,

mounting means suitable for mounting on a support surface and constructed to receive said support plate in mounting relation thereby to effect mounting of said storage reel assembly on the support surface.

whereby a cord such as an electrical cord and the like, may be stored on said storage reel by first winding a length of the cord about said auxiliary reel and then rotating said storage reel to take up and store the remainder of the cord in said storage core of said reel.

3,880,379

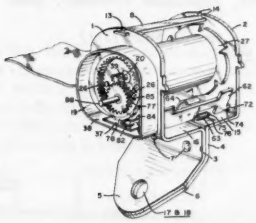
RETRACTOR WITH SWITCH

Frederick C. Booth, Birmingham, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Dec. 21, 1971, Ser. No. 210,532

Int. Cl. A62b *35/00;* **H01h** *3/16;* **B65h** *63/08*

U.S. Cl. 242—107.4 **14 Claims**



1. In a safety belt retractor having a take-up reel for a safety belt, said reel being keyed to a reel shaft mounted in the retractor, the improvement for signaling when an occupant is not using the safety belt comprising:

an electric switch mounted on the retractor, said switch having a first contact member and a second contact member said first contact member having a contact surface area, said second contact member having a movable section at one end thereof and a stationary section at the other end thereof, said movable section having a contact shoe and means movably supporting said shoe for making a wiping contact with said first contact member when said shoe is moved to engage said first contact member, said contact shoe thereby making self-cleaning electric contact with said contact surface area of said first contact member when said electric switch closes; and

a gear train mounted on the retractor and coupled to said reel shaft, said gear train including a ring gear; a raised cam surface on a portion of the perimeter of said ring gear, said cam surface rotating with said ring gear, said switch being normally closed before the safety belt is unwound from the retractor, said second contact member of said switch being opened by said cam surface when the safety belt is initially unwound a predetermined length from the retractor.

3,880,380

SEAT BELT WEBBING RETRACTOR

Fumio Sugiura, Aichi-ken, and Kazuo Okamoto, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Filed Aug. 27, 1973, Ser. No. 391,795

Claims priority, application Japan, Mar. 12, 1973, 48-28781

Int. Cl. A62b *35/00;* **B65h** *75/48*

U.S. Cl. 242—107.4 **14 Claims**

1. A seat belt webbing retractor comprising:

a retractor body having opposite side walls and a bottom;

a take-up shaft having means to take up a seat belt webbing, said take-up shaft being rotatably mounted between said opposite side walls of said retractor body;

a pair of ratchets respectively secured to the opposite ends of said take-up shaft;

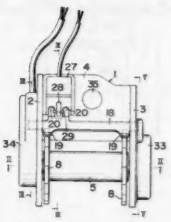
a pawl disposed within said retractor body;

means for urging said pawl to engage with said ratchets for preventing the rotation of said take-up shaft in the direction of paying off the seat belt webbing;

a solenoid unit supported on said retractor body, said solenoid unit being adapted to hold during the energization thereof said pawl at a position not subject to engagement with said ratchets;

a switch means for rendering said solenoid unit de-energized;

a cam plate including a cam section adapted to engage said pawl so as to hold said pawl at the position not subject to



engagement with said ratchets only during an initial period fo paying off the seat belt webbing and another cam section adapted to act upon said switch means for rendering said solenoid unit de-energized only during said initial period;

a de-energized circuit having a collision sensor means operative to de-energize said solenoid unit upon being actuated; and

gears coupling said cam plate to said take-up shaft, to enable said cam plate to execute substantially one rotation for a total number of rotations of said take-up shaft required for paying off the total length of the seat belt webbing.

3,880,381

SEAT BELT RETRACTOR MECHANISM

Richard E. Peel, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 30, 1974, Ser. No. 465,633

Int. Cl. B65h *75/48*

U.S. Cl. 242—107.4 **7 Claims**

1. A seat belt retractor mechanism having a belt receiving reel means rotatably extending between spaced sidewalls of a support bracket,

the reel means including a shaft having a ratchet plate at each of its ends in proximity to an inner side of a sidewall, the ratchet plates having peripheral ratchet teeth,

a locking bar paralleling the reel means shaft pivotally mounted in the sidewalls for movement into engagement with the ratchet plates to lock the reel against rotation in seat belt protraction direction,

and an inertia sensor coupled to the locking bar for driving the latter into ratchet plate engagement upon acceleration of the sensor,

the inertia sensor comprising a pendulum suspended from a support plate mounted on the outer side of one of the sidewalls,

wherein the improvement comprises:

the reel shaft having an extension projecting through the sidewall supporting the pendulum,

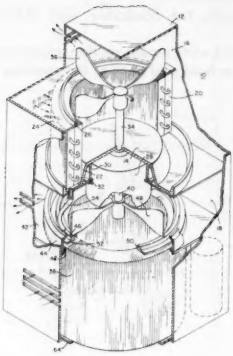
an annular ratchet plate keyed to the shaft extension,

the annular ratchet plate having internal ratchet teeth,

a lever pivotally suspended from the shaft extension with its free end in abutting relation to the locking bar,

a pawl pivotally mounted on the pivotally suspended lever for swinging movement into and out of engagement with the annular ratchet,

and a bell crank means mounted on the outer side of the one sidewall coupled to the pawl and responsive to acceleration displacement of the pendulum for pivoting the pawl into engagement with the annulus ratchet.



rotation of the reel caused by protraction forces exerted on the belt immediately following pendulum displacement causing the annular ratchet to bodily shift the engaged pawl in a direction to pivot the locking bar into locking engagement with the reel ratchet plates to prevent further belt protraction movement.

3,880,382

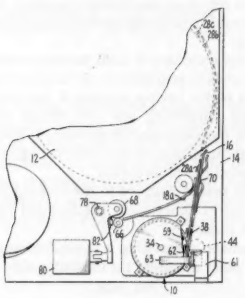
TAPE EXTRACTOR FOR MAGNETIC TAPE CARTRIDGE SYSTEM

Johannes K. Jantzen, Mount View; Eric K. Maxon, Los Gatos, and Andrew W. Hinman, Sunnyvale, all of Calif., assignors to International Video Corporation, Sunnyvale, Calif.

Filed Oct. 26, 1972, Ser. No. 301,052

Int. Cl. G11b *15/66*

U.S. Cl. 242—195 **8 Claims**



1. An automatic tape extractor for extracting a tape from within a partially enclosed tape reel, the tape having an attached tape leader with a slot near its distal end, the extractor comprising:

a. an elongated band having a hook at its distal end;

b. first drive means, including a reversible electric motor, operably connected to said elongated band for extending and retracting the end of said band;

c. second drive means operably connectable to a tape reel for rotating a connected tape reel in at least a windup direction;

d. guide means for guiding said band into the periphery of a tape reel connected to said second drive means; and

e. first activating means for activating said first drive means and extending said band along said guide means.

3,880,383

CONTROL FLAP UNIT FOR PROJECTILES OR ROCKETS

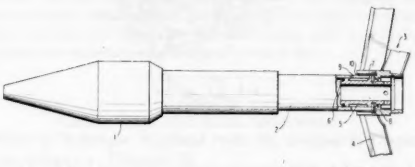
Alfred Voss, Cologne; Heinz-Wilhelm Kreutz, Troisdorf-Oberlar; Heinz Kroschel, Troisdorf-Sieglar, and Manfred Strunk, Neuenvade, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed June 4, 1973, Ser. No. 366,519

Claims priority, application Germany, June 3, 1972, 2227103

Int. Cl. F42b *13/32*

U.S. Cl. 244—3.27 **14 Claims**



1. A control flap unit for a projectile comprising:

a one-piece integral rudder carrier extending in the direction of a longitudinal axis of the projectile and having a rear portion of larger cross-sectional dimensions than a more forward portion immediately adjacent thereto,

at least one guiding fin means attached to said rudder carrier for pivotal movement about respective pivot axes extending transverse to said longitudinal axis,

pivot lever means mounted on each of said fin means eccentrically with respect to respective ones of said fin pivot axes,

lateral fin guide slot means in said rear portion for accommodating pivotal movement of radially inward portions of said fin means,

pivot lever guide slot means in said carrier engageable with said pivot lever means for effecting pivotal movement of said fin means about said respective pivot axes in response to longitudinal movement of said pivot lever means, said pivot lever guide slot means extending from said rear portion forwardly into said more forward portion to accommodate attachment and detachment of said fin means with said pivot lever means fixedly mounted thereto; and

longitudinally movable abutment means in said carrier engageable with said pivot lever means to impart longitudinal movement to said pivot lever means.

3,880,384

DIRECT LIFT CONTROL OF AIRCRAFT

Patrick Ralph Ashill, Bromham, and David Norman Foster, Bedford, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Mar. 12, 1973, Ser. No. 340,305

Claims priority, application United Kingdom, Mar. 14, 1972, 11828/72

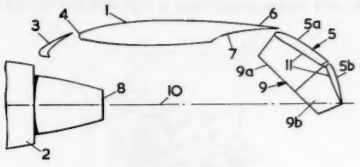
Int. Cl. B64c *3/58*

U.S. Cl. 244—42 D **8 Claims**

1. A direct lift control device, for an aircraft having a fuselage and two wings, comprising:

at least one flap on each wing and means for moving each flap between a retracted position and an extended position;

for each flap a gas turbine engine so positioned that efflux therefrom impinges on the flap when the flap is in the extended position; and

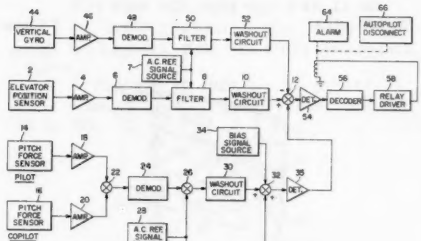


on each flap, two fences, one on each side of a central axis of the efflux and means for moving each fence between a first position flush with the flap and a second position substantially normal to the flap and substantially parallel to the efflux axis, whereby spread of said efflux across the span of the flap is reduced.

3,880,385
FLIGHT CONTROL SYSTEM HARDOVER MONITOR WITH PROVISIONS FOR PREVENTING NUISANCE ALARMS

Gibson Reynolds, Tuxedo Park, N.Y., and Jerry Doniger, Montvale, N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Sept. 28, 1973, Ser. No. 401,910
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 M **7 Claims**



1. A monitor for an aircraft control system, comprising:

first means for sensing the position of an aircraft attitude control surface and for providing a first signal corresponding to the sensed position;

second means for sensing the force exerted by a pilot of the aircraft on a member which actuates the aircraft control surface and for providing a second signal corresponding to the sensed force;

third means for sensing the force applied for automatically actuating the aircraft control surface and for providing a third signal corresponding to the sensed force;

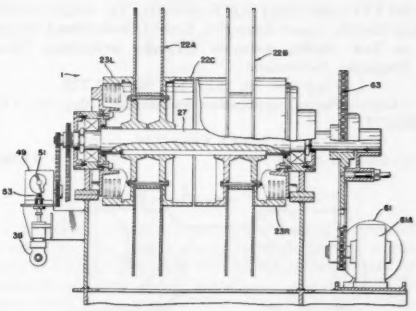
monitoring means; and

actuating means connected to the first, second and third means and to the monitoring means, said actuating means responsive to the first signal when said signal corresponds to a control surface hard-over position for activating the monitoring means, responsive to the second signal when said signal corresponds to a predetermined force for inhibiting activation of the monitoring means, and responsive to the third signal when said signal corresponds to a predetermined force for inhibiting activation of the monitoring means.

3,880,386
AIRCRAFT RETARDING SYSTEM

John J. Byrne, Canton, Ohio, and Robert W. Gruger, Springfield, Pa., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Continuation of Ser. No. 368,519, May 19, 1964, abandoned, which is a division of Ser. No. 123,527, July 12, 1961, Pat. No. 3,142,458, which is a continuation-in-part of Ser. No. 778,723, Dec. 8, 1958, abandoned. This application July 24, 1972, Ser. No. 274,239
Int. Cl. B64f *1/02*
U.S. Cl. 244—110 A **5 Claims**



1. An energy absorber unit comprising a reel, said reel having aligned winding drums, a loop formed from a coilable linear element, each end of the loop wound on one of the drums so as to leave an extended center arrest loop portion, said loop being reeved across a landing surface, a fluid brake operatively coupled to said reel, said brake being operated to retard the rotation of said reel caused by the unwinding of said ends of the linear element loop from said aligned winding drums of the reel when the said loop is placed under load, and a retrieve unit for rewinding the respective arrest loop ends onto said aligned drums, said retrieve unit including power means drivably coupled to said reel to rotate the same in a reverse direction to the direction of rotation thereof during linear element payout.

3,880,387
AIRCRAFT CANOPY EJECTION

Edward F. Martin, Jr., Glendale, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

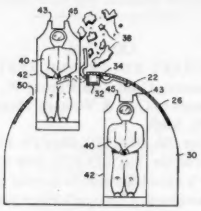
Filed June 27, 1974, Ser. No. 483,499
Int. Cl. B64c *1/14*
U.S. Cl. 244—121 **11 Claims**

1. In an aircraft having a canopy and carrying crewmembers each seated in a respective ejection seat, a canopy breakaway apparatus comprising:

a rigid plate-like member adjacent said canopy above each ejection seat;

pivoting means supporting said plate-like member in the

interior of said canopy whereby an upward impact force acting on said plate-like member causes it to pivot into



said canopy and shatter it, and to continue to swing outward to produce an opening in said canopy.

3,880,388

LEG TYPE SUPPORT WITH AUTOMATIC ADJUSTMENT

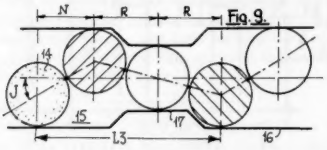
Rene Beguin, Chene-Bougeries, Geneva, Switzerland, assignor to Test, Societe anonyme d'Etudes techniques, Chene-Bougeries, Switzerland

Filed Apr. 20, 1973, Ser. No. 353,728

Claims priority, application Switzerland, May 12, 1972, 7025/72

Int. Cl. E06c *7/44*

U.S. Cl. 248—188.3 **4 Claims**



1. A leg-type support with automatic adjustment, comprising at least two vertically movable supporting elements and a transmission means coupling the supporting elements and so arranged that one of the supporting elements descends when the other is pushed upwardly, the transmission means consisting of balls and a tubular guide accommodating the balls and having at least one constriction, the balls changing their relative positions on the combined movement of the supporting elements, and the tubular guide being so designed that the relative movement of the balls results in alternate elongation and contraction phases of the effective length of the transmission means so that, when the supporting elements are both retained, pronounced locking positions are obtained which correspond to the contraction phases of the transmission means.

3,880,389

RIFLESCOPE MOUNT

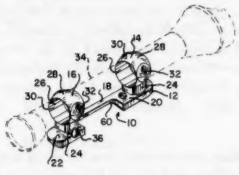
Donald J. Burris, Greeley, Colo., assignor to Burris Company, Greeley, Colo.

Filed July 9, 1973, Ser. No. 377,744

Int. Cl. A47b *96/06*

U.S. Cl. 248—205 R **18 Claims**

1. Apparatus for detachably fastening the front end of a riflescope to a rifle so as to permit limited relative pivotal movement of the former relative to the latter which comprises: a rigid base fixedly attachable to the rifle having a downwardly and inwardly tapered seat-forming frusto-conical depression in the top surface thereof, a socket in the underside thereof opposite said depression in the top terminating at its upper end in a roof-forming surface, and an elongate essentially diametrical slot intersecting said depression establishing communication between the latter and the socket therebeneath; ring means having a post depending from the underside thereof terminating at its lower end in a downwardly and inwardly tapered frusto-conical tip section complementary to the seat-forming depression in the base; and, latch-forming means shaped to enter the slot in the base when aligned therewith operative upon limited relative rotation between said base and ring to releasably lock same together in assembled relation, said means comprising a clip attached to the trun-



cated apex of the tip section having a pair of springable tangs projecting in opposite directions from said point of attachment, said tangs being spaced beneath the frusto-conical section thereabove a distance such that they will seat against the roof-forming surface when rotated into face-to-face contacting relation therewith, and said tangs and roof-forming surface cooperating with one another in assembled relation to continually bias said opposed frusto-conical surfaces into tight slidable mated engagement.

3,880,390

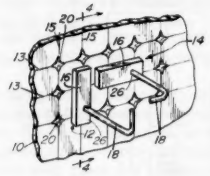
UNIVERSAL PEGBOARD

Ronald D. Niven, Lincolnwood, Ill., assignor to Dynagraphic Merchandising Corporation, Chicago, Ill.

Filed Nov. 8, 1973, Ser. No. 413,837

Int. Cl. A47f *5/00*; **E06b** *7/28*; **A47h** *1/10*

U.S. Cl. 248—223 **1 Claim**



1. A peg and universal pegboard for mounting a display having a detent-secured bayonet mount comprising:

a. equally spaced rows and columns of a multiplicity of non-circular apertures in said pegboard having mutually identical principal planes of symmetry in orthogonal directions,

b. an elongate base block having a shank extending from its back face adjacent one end thereof,

c. a lock block mounted on the end of the shank spaced from the back face of the base block by a distance slightly greater than the thickness of the pegboard and having a shape geometrically similar to but slightly smaller than that of the apertures, and

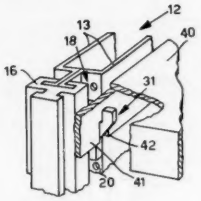
d. a detent means comprising a stud extending from the back face of the base block and having a rounded end of a diameter larger than the smallest dimension across an aperture in the plane thereof, said stud being spaced from the shank along the length of the base block by a distance equal to the distance between the rows and columns of said apertures.

3,880,391

FASTENING DEVICE FOR MODULAR FURNITURE

Agostino Gianardi, Arcola, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Torino), Italy

Filed Oct. 5, 1973, Ser. No. 404,082
Claims priority, application Italy, Nov. 30, 1972, 53803/72
Int. Cl. A47g 29/02
U.S. Cl. 248—246 3 Claims



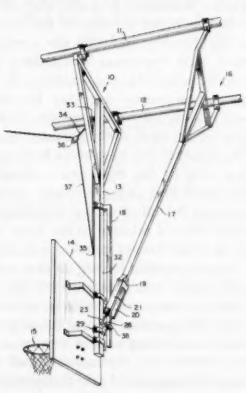
2. A fastening device for modular furniture having a vertical groove provided with a bottom side and a lateral side including a plurality of security apertures serially arranged along said lateral side and an hook adjustable on said apertures, said hook comprising a rectangular bar provided with an upwardly curving arm on the front part and at least one lateral member curved or included such that a force acting on said hook tends to press said hook laterally against said lateral side and rearward against said bottom side, said lateral member being constituted by a pin protruding from a lateral side of said bar and inclined or curved downwardly, said pin having a length greater than, and a diameter smaller than said apertures for insertion therein, said pin and said apertures being arranged so that when said bar impinges against said bottom side, said arm protrudes from said groove.

3,880,392

WIDE BEARING WEDGE LOCK

Joseph W. Duganich, P.O. Box 19024, Indianapolis, Ind. 46219

Filed Feb. 15, 1973, Ser. No. 332,583
Int. Cl. A63b 67/00, 71/04; B66f 11/00
U.S. Cl. 248—324 6 Claims



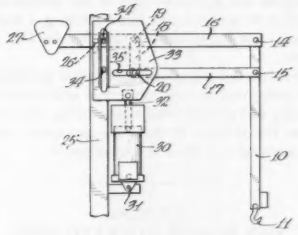
1. In a device of the class described, a main unit suspended to swing about a substantially horizontal axis near its upper end, between a substantially vertical dependent position and a substantially horizontal raised position, a brace unit suspended from an axis parallel with said substantially horizontal axis and spaced rearwardly therefrom, means on said main unit defining a longitudinal guideway, means at the distal end of said brace unit engaged with and guided by said guideway, a bracket carried by said main unit near the distal end of guideway and having a generally upwardly presented surface rearwardly related to said main unit at a permanent acute angle for wedgedly receiving the external surface of said means at the distal end of said brace unit when said main unit is truly vertical, and a device carried at the forward part of said main unit.

3,880,393

LOAD BALANCER WITH BALANCE OVERRIDE CONTROL

Robert W. Watson, Mendota, Ill., assignor to Conco Inc., Mendota, Ill.

Filed June 4, 1973, Ser. No. 366,783
Int. Cl. B66d 1/00, 1/08, 1/48
U.S. Cl. 248—325 5 Claims



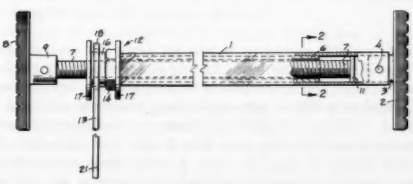
1. In a load balancer, a frame, a load support arm movably mounted on said frame, a power cylinder having a piston movably connected to said arm to act against a load connected to said arm, means connectable to a source of fluid under pressure for applying fluid to said cylinder, a control circuit interposed between said means and said cylinder, said control circuit including a pilot operated valve for directing fluid to and from said cylinder, said valve being responsive to a control fluid pressure and cylinder fluid pressure whereby an imbalance in said fluid pressures resulting from movement of said piston caused by manual movement of the load causes said valve to restore a balance in said pressures, and balance override means for selectively directing a fluid pressure greater than said control fluid pressure to said pilot operated valve to cause said valve to direct a greater fluid pressure to said cylinder to move the load and without changing the established control fluid pressure whereby the load may again be balanced by said established control pressure.

3,880,394

EXTENSIBLE LOAD BRACING DEVICE

Warren R. Wisecarver, Walnut Creek, Calif., assignor to Bishop-Wisecarver Corporation, San Francisco, Calif.

Filed Nov. 8, 1973, Ser. No. 413,957
Int. Cl. E04h 17/00; E04g 21/18, 25/00
U.S. Cl. 248—354 S 1 Claim



1. In an extensible load bracing device for engagement with opposite walls,

a tubular member of polygonal cross-section,
a threaded rod telescoped in the tubular member,
a fixed sleeve in said tubular member having cylindrical inner periphery to slideably hold said rod,
said rod being extended beyond an end of said tubular member,
a foot on the other end of said tubular member,
a foot on the outer end of said rod,
a nut threaded on said rod adjacent said tubular member,
a neck of reduced diameter on said nut,
a wrench head fitting over said nut for turning the nut,
said reduced portion being of smaller diameter than the interior of the wrench head to allow loose angular adjustment of said wrench head,
a wrench handle extended from said wrench head for manipulating said wrench head for repeated turning of said nut,
and an enlarged disk on each end of said nut for manually turning the nut independently of the wrench head,
the interior of said wrench head forming a socket fitting over said nut being loosely turnable on said cylindrical portion,
and a head on the rod having polygonal periphery slidable in the polygonal inner periphery in said tubular member, the inner end of said fixed sleeve being spaced from foot end of the tubular member to determine the limit of movement of said head and of said rod.

3,880,395

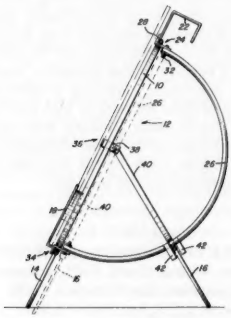
SIGN HOLDER (FOUR LEG TYPE)

Reuben N. Bompart, 305 N. Ewing, Helena, Mont. 59601

Continuation-in-part of Ser. No. 290,497, Sept. 20, 1972, Pat. No. 3,815,860. This application Apr. 25, 1974, Ser. No. 464,611

Int. Cl. A47b *97/06*

U.S. Cl. 248—464 **10 Claims**



1. A portable easel-type holder for signs, and similar structures, including a ring frame having a pair of legs attached to the lower half thereof, coplanar with each other, and coplanar with said ring frame, sign supporting members mounted in spaced relation on said ring frame, a substantially semi-circular prop spanning said ring frame and pivotally connected thereto at opposite sides, a substantially semi-circular brace pivotally connected to said ring frame at the top and bottom thereof, said brace having a pair of closely spaced projections on its outer periphery, which snugly engage said prop, and two additional legs attached to the lower portions of said prop to give the holder a four-legged support.

3,880,396

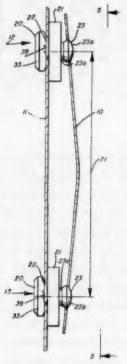
QUICK CHANGE PANEL FASTENING SYSTEM

Robert W. Freiberger, Parma Heights, Ohio, and Elwood S. Michaels, Roanoke, Va., assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 25, 1973, Ser. No. 409,649

Int. Cl. A44b *17/00*

U.S. Cl. 248—475 R **4 Claims**

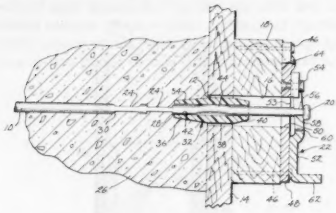


1. An apparatus for securing a deformable panel to a base having a pair of spaced apertures and which panel has a pair of spaced keyhold openings therein each of which keyhole openings includes a large opening portion and a slot portion communicating therewith and extending toward each other and which slot portions terminate in a circular surface and where the distance between the centers of the circular surfaces approximates the distance between the centers of the apertures in the base, said apparatus comprising a pair of one-piece fasteners to be secured in the apertures in the base, each of said fasteners comprising a rotary fractional turn fastener, each of said fractional turn fasteners comprising a nose portion for passage through said apertures and locking engagement on the backside of the base and a head portion for location on the front side of the base and a shank portion interconnecting said head and nose portions, each of said fasteners including means for interlocking said fasteners with the base upon rotation thereof relative to the base, said head portion having a projecting hanger portion extending away from the base, said hanger portion having an end portion of a diameter which is less than the diameters of the enlarged portions of the keyhole openings and is greater than the transverse dimension of said slot portions of said keyhole openings, a hanger portion shaft connecting said end portion and said shank portion having a transverse dimension which is slightly less than the transverse dimensions of said slot portions of said keyhole openings, whereby said panel upon deformation may be deformed to align the enlarged portion of the keyhole openings in the panel with said hanger portions for insertion of said hanger end portions through said enlarged portions of the keyhole openings and on a relaxing of the force providing said deformation enabling the hanger portion shaft to move into said slot portions in the panel and thereby secure the panel to the base.

3,880,397
BOWED TIE ROD WITH DEFORMABLE CONE MEANS

Donald E. Becker, Kenosha, Wis., assignor to Becker, Inc., Kenosha, Wis.

Filed July 16, 1973, Ser. No. 379,681
Int. Cl. E04g 17/08
U.S. Cl. 249—214 3 Claims

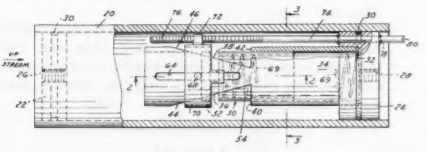


1. In a snappable concrete form tie rod having a head on at least one end thereof, and having a weakened portion spaced inwardly from said head whereby the end of the tie rod may be snapped off by applying a torque thereto, and having a cone member on said tie rod between said weakened portion and said head, the improvement wherein said cone member is constructed of deformable material and nas a longitudinally-extending bore therein which is somewhat larger in diameter than said tie rod, whereby said cone member may be freely slid along said tie rod until close to assembled position, a portion of the length of said tie rod being outwardly bowed between said weakened portion and said head while maintainingf the original diameter of the tie rod, with said outwardly-bowed portion positioned within said cone portion, and the deformable material of the cone allowing the larger diameter of its bore to deform enough to accept the bowed portion of the rod but not enough to prevent the bowed portion from binding within the bore to thereby releasably hold said cone member in final assembled position on said tie rod next to the weakened portion.

3,880,398
FLUID FUSE

Lawrence M. Rubrich, 11424 Republic, Warren, Mich. 48089

Filed Feb. 8, 1974, Ser. No. 440,680
Int. Cl. F16k 17/08
U.S. Cl. 251—16 10 Claims

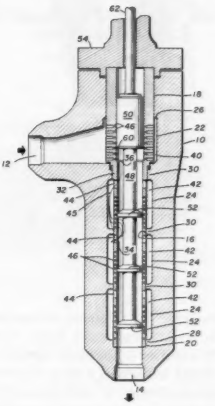


1. A fluid volume limiting valve comprising, in combination:
a housing having fluid inlet and outlet ports,
a hollow cylinder in said housing communicating at one end with one of said ports and at the other end with the interior of the housing,
a piston in said cylinder having a wall portion for blocking fluid flow through the cylinder between the interior of said housing and said one port and responsive to fluid pressure differentials therebetween to shift the piston in the cylinder,
a lateral opening through a side wall of the cylinder in bypassing relation with said wall portion of the piston for establishing communication between the interior of said housing and said one port,
said lateral opening increasing in area from one end to the other in the direction of piston travel, and
said piston having a wall portion for gradually blocking said lateral opening during said piston travel.

3,880,399
MULTISTAGE NOISE REDUCING FLOW CONTROL VALVE

Fred Joseph Luthe, Marshalltown, Iowa, assignor to Fisher Controls Company, Inc., Marshalltown, Iowa

Filed Apr. 1, 1974, Ser. No. 456,691
Int. Cl. F16k 47/04
U.S. Cl. 251—121 12 Claims



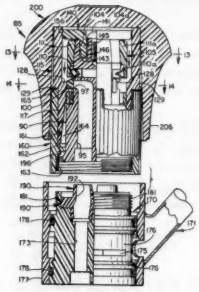
1. A high-pressure flow control valve, comprising:
a valve body having an inlet, an outlet, and a central passageway communicating therebetween;
valve cage means received within and cooperating with said passageway to define a central bore, an enlarged inlet chamber communicating with said inlet, and at least one further chamber spaced apart from said inlet chamber, each of said chambers surrounding said bore;
said valve cage means including a plurality of pressure-reducing orifices registering with said inlet and further chambers near the outlet ends thereof to form inlet and further throttling stages, and a plurality of substantially nonrestricting flow passages registering with said further chamber near the inlet end thereof;
vale stem means reciprocably received within said central bore; and
valve plug means carried by said stem means and slidingly engaging said central bore for selectively exposing a variable number of said restricting orifices registering with each of said chambers for fluid flow.

11. A method of high pressure drop fluid flow control, comprising the steps of:
subdividing and throttling a fluid through a plurality of serially arranged multiorificial throttling stages, and
varying the areas open for fluid flow in each of said stages to maintain between said areas a predetermined relationship.

3,880,400
DIAPHRAGM VALVE CARTRIDGE

George S. Cole, 300 E. Main St., Barrington, Ill. 60010; Richard L. Ritzenthaler, 530 Devonshire Ln., Crystal Lake, Ill. 60014, and Don C. Arnold, 113 Cypress Ct., Palatine, Ill. 60067

Division of Ser. No. 67,346, Aug. 27, 1970, Pat. No. 3,738,389. This application June 8, 1973, Ser. No. 368,027The portion of the term of this patent subsequent to June 12, 1990, has been disclaimed.
Int. Cl. F16k *11/14*
U.S. Cl. 251—155 23 Claims



1. A valve cartridge for a faucet, comprising:

a. a generally cylindrical valve body having at least one recess in its exterior cylindrical surface and at least one supply duct and a discharge duct, said supply duct terminating in an inlet port in said recess and said discharge duct terminating in an outlet port in said recess, said inlet and outlet ports being in spaced relation with the walls of said recess;

b. a valve member of rubber-type material in said recess and overlying said inlet and outlet ports therein, the perimeter and bottom margin of said valve member respectively engaging the walls and bottom of the recess with a pressure relationship providing a liquid-proof seal, said valve member having an exterior boss in alignment with the underlying inlet port, said valve member being responsive to liquid pressure within said valve body to enhance said seal between said valve member and said valve body in proportion to the liquid pressure, thereby providing a self-sealing characteristic;

c. a valve member retainer mounted on said valve body and engaging said valve member with a pressure relationship cooperating to establish said pressure relationship between said valve member and the wall and bottom of said recess;

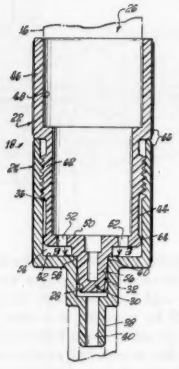
d. an actuator surrounding said body and said valve member and movable axially and rotatably to control rate of flow, said actuator having an interior surface engaging the exterior boss of said valve member, said interior surface being cylindrical in a longitudinal region which, when positioned axially to engage said boss, causes said valve member to close said inlet port, the remaining interior surface for engaging said boss being a cam surface which, except for a longitudinal segment aligned with a segment of said cylindrical surface, is eccentric and tapers outwardly from said cylindrical surface to permit variations in spacing between said valve member and said inlet port and thus control rate of flow through said inlet port; and

e. guide means on said valve body for maintaining said actuator in coaxial relation with said valve body.

3,880,401
FLOW METERING AND SHUT-OFF VALVE

Harold L. Wiltse, 4322 Baldwin Park Ave., Baldwin Park, Calif. 91706

Filed Oct. 1, 1973, Ser. No. 402,152
Int. Cl. F16r *47/00*
U.S. Cl. 251—205 2 Claims



1. A valve comprising outer and inner valve parts each comprising a one piece molded plastic part,

said outer part comprising a tubular barrel having a relatively large diameter cylindrical portion at one end, a relatively small diameter nipple at the other end, and an axial flow metering bore between said ends opening at one end to the interior of said cylindrical portion and at the other end to an axial passage through said nipple,

said inner part comprising a sleeve having an axial flow metering plug at one end slidably fitting in said metering bore, a cylindrical coupling portion at the other end, and an intermediate portion between said sleeve ends having an axially presented transverse wall about said plug, said cylindrical sleeve portion being threaded in said cylindrical barrel portion, whereby said metering plug is adjustable axially in said metering bore by relative rotation of said parts,

said sleeve having a central passage opening at one end through said opposite sleeve end and at the other end through ports in said transverse sleeve wall to the interior of said cylindrical barrel portion about said metering plug, and

said metering plug having at least one tapered axial flow passage opening laterally of said plug and endwise through the end of said plug, whereby axial adjustment of said metering plug regulates fluid flow through said metering bore.

3,880,402
MULTIPLE PLATE VALVE

Henry Fleischer, 18 Notch Park Rd., Little Falls, N.J. 07424

Filed July 26, 1973, Ser. No. 382,961
Int. Cl. F16k *3/00*
U.S. Cl. 251—212 13 Claims

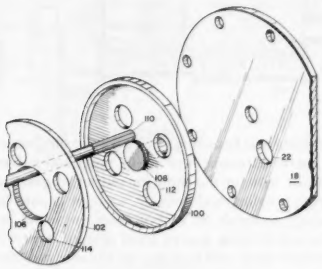
1. A valve designed to continue to function to close off a conduit even after portions of the valve have worn, said valve comprising, in combination,

a body portion including a pair of outer cover members, each of said cover members have an aperture therein;

at least a pair of closure members comprising first and second plates retained between said outer cover members, said first plate including a first aperture and a flange spaced from said first aperture, said flange including a plurality of gear teeth disposed about the same, and a

second plate including a second aperture and an opening therein spaced from said second aperture, said opening being larger than said flange of said first plate, and having a plurality of gear teeth disposed in proximity to the periphery of said opening, said second plate being disposed on said first plate so that said flange of said first plate passes through said opening of said second plate;

common gear means for positioning said first and second plates relative to each other and to said apertures of said outer cover plates, said gear means being disposed between said flange of said first plate and said second plate



to engage said gear teeth of said first plate and said gear teeth of said second plate in a manner such that movement of said gear means causes simultaneous movement of said first and second plates toward or away from each other so that said first and second plates and apertures in said plates may cooperate with each other to form a common opening in alignment with said apertures in said outer cover plates or to close off said apertures in said outer cover plates; and

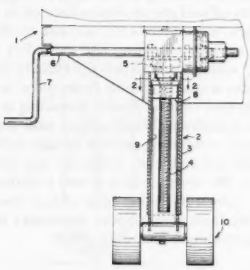
means for maintaining said gear teeth of said second plate and said gear teeth of said first plate in engagement with said gear means.

3,880,403

TRAILER PROP OPERATING STRUCTURE

John J. Glassmeyer, Covington, Ky., assignor to Pullman Incorporated, Chicago, Ill.

Filed Feb. 13, 1974, Ser. No. 442,011
Int. Cl. B60s *9/02*
U.S. Cl. 254—86 R **8 Claims**



1. In a trailer prop, a jackscrew and a nut arrangement for raising and lowering the prop comprising:

an immovable vertically extending jackscrew having thread means, said thread means of said jackscrew being of double start thread construction including a pair of vertically alternating helical thread elements, each thread element having a downward facing lower thread face being directed inwardly generally perpendicular to the vertical axis of the jackscrew,

a nut on the jackscrew having thread means having an upward facing thread face complemental to and for engagement with said lower thread face of each thread element of said jackscrew for lifting the prop,

each thread element of said jackscrew having an upward facing upper thread face at less than 90° to the vertical axis of the jackscrew and directed upwardly in sloping fashion toward the vertical axis of the jackscrew, and

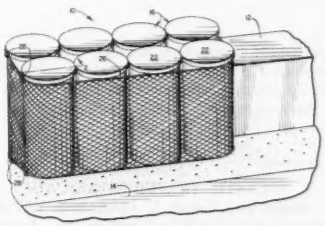
said thread means of said nut having a downward facing thread face complemental to and for engagement with said upper thread face of each thread element of said jackscrew for retracting the prop and to eliminate downward jiggling of the nut on the jackscrew.

3,880,404

ENERGY ABSORBING IMPACT ATTENUATING HIGHWAY SAFETY SYSTEMS

John C. Fitch, Fall Village, Conn., assignor to FIBCO, Inc., Boston, Mass.

Filed Aug. 29, 1973, Ser. No. 392,502
Int. Cl. E01f *15/00*
U.S. Cl. 256—1 **4 Claims**



1. A reusable impact attenuating barrier system for decelerating an errant vehicle as it approaches a fixed object comprising an array of individual hollow cells positioned adjacent said object, each cell being formed of a flexible rupture-resistant sheet material, a light-weight flexible spacer filling the lower portion of each cell, the upper portion of each cell containing a high density dispersable mass, said spacers being of sufficient height to dispose the center of gravity of the cells substantially at the center of gravity of said vehicle, and a flexible belt encircling said cell array, whereby upon normal impact by a vehicle, said cells are deformed without rupture to expel and displace said mass to decelerate said vehicle by momentum exchange, and said barrier may be readied for reuse by restoring said cells to their original configuration and replacing said mass.

3,880,405

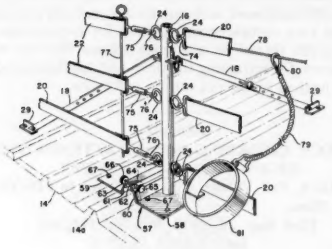
PORTABLE, PERSONNEL GUARD RAIL

Ralph H. Brueske, Kansas City, Mo., assignor to Butler Manufacturing Company, Kansas City, Mo.

Filed Jan. 18, 1974, Ser. No. 434,623
Int. Cl. E04h *17/16*
U.S. Cl. 256—59 **17 Claims**

1. A lightweight, reusable, portable personnel guard rail for unobstructively enclosing a work area for workmen working at dangerous heights, to protect the workmen against falls, comprising: a plurality of upright posts having barrier attaching means thereon for attachemnt thereto of elongate barriers extended substantially horizontally between adjacent posts; and quick-release post attaching means on the bottom ends of the posts for releasably attaching the posts to a support structure, said post attaching means comprising a substantially horizontal plate fixedly secured to the lower end of the post, said plate having an upstanding, inverted, open-ended channel-shaped portion between opposite edges thereof and oppositely outwardly directed substantially horizontal side portions on opposite sides of the channel-shaped portion, said channel-

shaped portion adapted to receive an upstanding roof seam of a roof panel and said side portions adapted to rest in flat relationship upon the upper surface of the roof panel on opposite sides of the seam; and a plurality of adjustable clamping



means extended horizontally through opposite sides of the channel-shaped portion and adapted to releasably engage opposite sides of the seam to securely but releasably clamp the post to the roof panel.

3,880,406

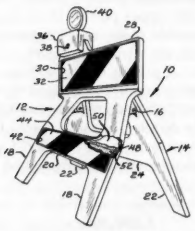
PLASTIC TRAFFIC BARRICADE

John J. Stehle, and Robert E. Davis, both of Palatine, Ill., assignors to Best Barricade Company, Inc., Palatine, Ill.

Filed July 15, 1974, Ser. No. 488,531

Int. Cl. E01f *13/00*

U.S. Cl. 256—64 **9 Claims**



1. A traffic barricade comprising first and second hollow resilient plastic panel members, each panel member comprising a pair of hollow leg portions and at least one hollow cross-bar portion integrally joined to said leg portions, a vertical panel portion adapted to receive warning indicia on at least one side thereof, said vertical panel portion being integrally formed with at least one of said panel members so as to extend above said leg portions, hinge means integrally formed on each of said panel members, the hinge means on each of said panel members being adapted to cooperate with the hinge means on the other to permit said panels to be pivoted relative to each other between a storage position and a use position, stop means on each of said panels for limiting the relative pivotal movement of said panels and defining said use position, and aperture means in each of said panels for permitting ballast to be placed in said hollow legs and cross-bar portions.

3,880,407

MIXER AND KNEADER WITH COUNTERACTIVE BLADES

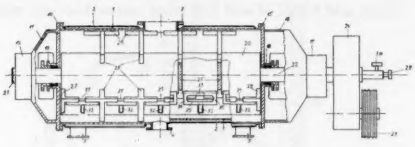
Heinz List, St. Jakobsstrasse 43, Pratteln, Switzerland

Filed Oct. 17, 1973, Ser. No. 407,040

Claims priority, application Switzerland, Oct. 18, 1972, 15339/72

Int. Cl. B01f *7/04*

U.S. Cl. 259—9 **18 Claims**



1. A mixing and kneading device for the mechanical, chemical and thermal treatment of liquid, pasty and pulverant products with or without the input or output of gases and vapor, comprising a cylindrical housing, an inlet in said housing for introducing materials to be processed into said housing, an outlet in said housing spaced from said inlet for withdrawing the materials from said housing, an agitator positioned within and having its axis extending in the axial direction of said housing, said agitator mounted for rotation about its axis, a plurality of plate-like elements secured to and extending radially outwardly from said agitator for rotation therewith, said plate-like elements disposed in a number of planes extending transversely of the axis of said agitator, a stirrer blade extending in the axial direction of said agitator and fixed to each said plate-like element on the radially outer periphery thereof, the radially outer periphery of said plate-like elements being spaced closely inwardly from the inner surface of said cylindrical housing so that as said agitator rotates at least said stirrer blade passes in closely spaced relation to the inner surface of said cylinder housing and effects a cleaning thereof, a plurality of stationary counter-elements secured to the inner surface of said cylindrical housing and extending radially inwardly towards said agitator, each said counter-element comprising a mounting support secured to the inner surface of said cylindrical housing and extending radially toward said agitator for a dimension at least slightly greater than the dimension between the inner surface of said cylindrical housing and the radially-inwardly facing surface of said axially extending stirrer blades, said mounting support being positioned in the axial direction of said cylindrical housing so that it is positioned between the adjacent ends of said stirrer blades located in adjacent planes of said blades, a counter-blade secured to the radially inner end of said support mounting and extending inwardly therefrom toward said agitator so that the radially inner edge of said counter-blades is spaced closely from and acts as a scraper for said agitator, said counter-blades extending in the axial direction of said cylindrical housing from said support mounting into the axially extending portion of said cylindrical housing in which said stirrer blades rotate so that said stirrer blades pass between the inner surface of said cylindrical housing and the radially outwardly facing edge of said counter-blades and spaced axially from said support mountings for said counter-blades for providing a kneading effect.

3,880,408

DEVICE FOR MIXING OF PAINTS AND TONERS

Pentti Karjalainen, Tampere, Finland, assignor to Winter Osakeyhtio, Tampere, Finland

Filed Jan. 15, 1974, Ser. No. 433,591

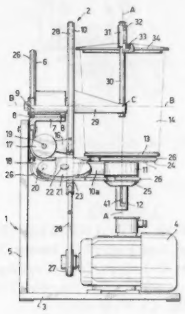
Claims priority, application Finland, Aug. 9, 1973, 2493/73

Int. Cl. B01f *9/00*

U.S. Cl. 259—72 **5 Claims**

1. An improved device for mixing cans of different sizes for paints, in particular paints and toners, which device comprises

a pedestal, a frame mounted on said pedestal to rotate around a first axis, a first rotary drive element fastened to said frame to bring about rotation thereof, a disc supported by said frame for fastening a can of paint to said frame, said disc being mounted to rotate around a second axis extending transversely with respect to said first axis, a second rotary drive element fastened to said pedestal coaxially with said first rotary drive element, power means connected to said first rotary drive element to bring about rotation thereof, and driving means connecting said second rotary drive element to said disc to



bring about rotation of said disc upon rotation of said first rotary drive element, the improvement consisting in that said disc is axially displaceably supported by said frame, and in that transmission means are coupled between said disc and said driving means, said transmission means being effective to change the number of revolutions of said disc around said second axis when said disc is displaced axially, so that when said disc is at a position corresponding to the largest paint can size, the number of revolutions is lower than when said disc is in a position corresponding to a smaller paint can size.

3,880,409

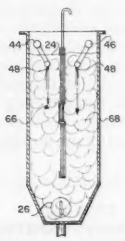
SOLUTION AGITATION APPARATUS

Hendrik F. Bok, Fairhaven, and Eugene St. Onge, Freetown, both of Mass., assignors to In-Line Technology, Inc., Assonet, Mass.

Division of Ser. No. 352,399, April 18, 1973. This application Jan. 15, 1974, Ser. No. 433,584

Int. Cl. B01f *5/20*; **C23b** *3/12*

U.S. Cl. 259—95 **5 Claims**



1. A system for agitating treatment solutions in treating substrates and the like, comprising:

A. a tank for containment of the treating solution;

B. means for operatively suspending a substrate immersed in the treatment solution; and

C. means for implementing a uniform and controlled turbulent flow of the treatment solution over the sides of the substrate, comprising spray nozzles positioned in the tank on opposite sides of the substrate, parallel thereto and below the surface of said treatment solution, whereby said spray nozzles create a flat overlapping spray pattern below the solution surface, directed downwardly from top to bottom along the substrate, wherein said directed spray pattern provides two parallel, flowing walls of solution running from the top of the tank to the bottom along opposite sides of the substrate.

3,880,410

APPARATUS FOR MANUFACTURING A COATING MASS FOR ROAD CONSTRUCTIONS

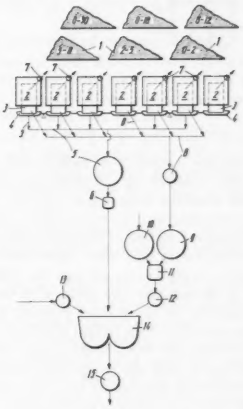
Carl-Hermann Heise, Hannoversche Str. 61, 3220 Alfeld, Germany

Filed June 8, 1973, Ser. No. 368,352

Claims priority, application Germany, June 10, 1972, 2228407

Int. Cl. B28c *1/22*

U.S. Cl. 259—159 R **9 Claims**

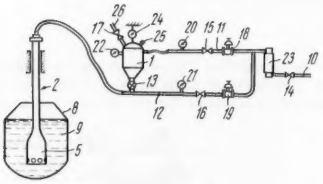


1. Apparatus for manufacturing a coating mass for road constructions, said apparatus comprising preparing means for pre-dosing, drying, and heating stone minerals of different grain size ranges to separate the stone minerals of each grain size range into a stone fraction and a fine material comprising a sand fraction and a self filler fraction; filtering means for separating the sand fraction and the self filler fraction of the separated fine material of each grain size range; recombining means for recombining the separated sand fraction of each grain size range with the separated stone fraction of the same grain size range; combining means for combining the separated self filler fractions of all grain size ranges; and mixing means for weighting and mixing the recombined stone and sand fractions of each grain size range together with the combined self filler fractions and a binding agent to form the coating mass.

3,880,411
DEVICE FOR TREATMENT OF MOLTEN CAST IRON IN VESSELS

Natalya Alexandrovna Voronova, pereviok Uritskogo, 11, kv. 4.; Anatoly Filippovich Shevchenko, ulitsa G. Pushkina, 1b, kv. 52.; Isaak Moiseevich Lafer, ulitsa Shpindyaka, 2, kv. 1.; Boris Vulfovich Dvoskin, Kirpichnaya ploschad, 6, kv. 3., all of Dnepropetrovsk; Moris Leonidovich Lavrentiev, ulitsa Ilicha, 52, kv. 23.; Nikolai Petrovich Ostapchuk, pereulok Ulyanova, 1., both of Zhdanov, Donetskoi oblasti; Evgeny Alexandrovich Kostitsyn, prospekt Kalinina, 5, kv. 43., and Ivan Yakovlevich Emelyanov, ulitsa G. Pushkina, 1b, kv. 58., both of Dnepropetrovsk, all of U.S.S.R.

Filed Aug. 24, 1973, Ser. No. 391,252
Int. Cl. C21c *7/00*
U.S. Cl. 266—34 T **1 Claim**



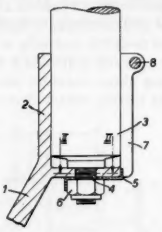
1. A device for treatment of molten cast iron with magnesium in vessels, comprising: a feeder in the form of a pressure vessel which supplies magnesium for the treatment of cast iron; a tuyere in the form of a pipe connected with said feeder, having a flaring-out nozzle at one end acting like an evaporator and provided with side holes, said end of the tuyere with the evaporator being immersed into the molten cast iron for the supply of magnesium; the relation of the inside diameter of said evaporator in the section passing through the upper edge of the side holes to the height of said evaporator from the upper edge of said side holes to the point where the hole of the tuyere pipe opens into the evaporator is from 0.3 to 0.8; a pipeline connecting said tuyere with a source of compressed gas and with said evaporator; a pipeline connecting said feeder with a source of compressed gas whose pressure delivers magnesium from the feeder into said pipeline which connects said tuyere with the source of compressed gas, the magnesium being entrained by compressed air flowing through this pipeline towards said tuyere, carried through said pipe and tuyere evaporator wherefrom it is injected in a vapourized state through said evaporator holes into molten cast iron thus treating the latter.

3,880,412
SUSPENSION UNITS

Lawrence George Nicholls, Kings Rd., Tyseley, Birmingham 11, England, assignor to Girling Limited, Birmingham, England

Filed Jan. 28, 1974, Ser. No. 437,203
Claims priority, application United Kingdom, Jan. 29, 1973, 4476/73
Int. Cl. B60g *13/00*
U.S. Cl. 267—67 **3 Claims**

1. A vehicle suspension unit comprising a stub axle, a strut having an end portion fitting within said stub axle, retaining means for preventing relative axial movement between said stub axle and said strut, and separate clamping means for clamping said strut and said stub axle together against relative rotation said clamping means comprising means defining a slit

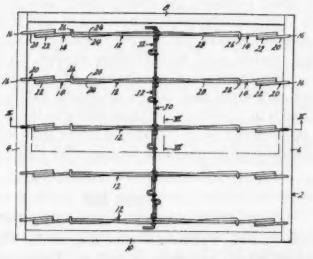


extending longitudinally of said stub axle and a pinch bolt acting across said slit.

3,880,413
SPRING BASE FOR UPHOLSTERED SEATING

John G. Platt, Carthage, and Robert O. Isaacs, Joplin, both of Mo., assignors to Flex-O-Lators, Inc., Carthage, Mo.

Filed May 3, 1974, Ser. No. 466,726
Int. Cl. F16f *1/00*
U.S. Cl. 267—80 **5 Claims**



1. A spring base for upholstered seating comprising a series of generally parallel spring units each adapted to extend between and be anchored at its respective ends to opposite rails of a seating frame, each of said spring units comprising a pair of elongated spring members each having a terminal portion adapted to be affixed to one of said frame rails, an arm extended toward the other of said frame rails, but terminating short of said other frame rail and overlapping a portion of the arm of the other spring member, and a transversely opening hook at the free end of said arm, the overlapping portions of said spring member arms being twisted together along the entire lengths thereof, and the hook of each of said spring arms being engaged about the arm portion of the other of said spring members.

3,880,414
DUAL INTERLOCKED SAFETY SPRING ASSEMBLY AND METHODS AND MACHINES FOR THE MANUFACTURE THEREOF

Woodrow Wilson Smith, and Jack Youngquist, both of Coldwater, Mich., assignors to Kuhlman Corporation, Troy, Mich.

Filed Dec. 26, 1973, Ser. No. 427,495
Int. Cl. F16f *3/04*
U.S. Cl. 267—168 **18 Claims**

1. A dual safety tension spring for association with two connecting points in an apparatus for exerting tension forces therebetween, comprising first and second spring coils each

having a plurality of turns, each of certain of said plurality of turns of said first coil being in non-intersecting substantial parallelism with a pair of adjacent turns of said second coil

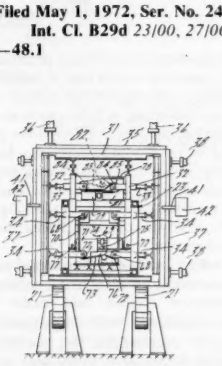
and disposed therebetween, and connection means at each end of one of said coils for connecting said coil to the connecting points.

3,880,415

CANTILEVERED INTERNAL SHORING

Richard T. Fujioka, Oxford, Mich., and Gerald A. Wooldridge, San Diego, Calif., assignors to Fruehauf Corporation, Detroit, Mich.

Filed May 1, 1972, Ser. No. 249,151
Int. Cl. B29d *23/00, 27/00*
U.S. Cl. 269—48.1 **7 Claims**



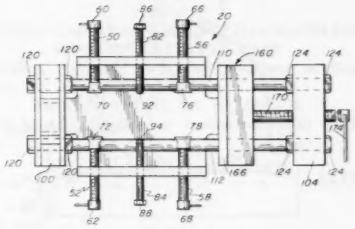
1. In a shoring structure for backing up the inner walls of a trailer body at the sides and roof thereof, a cantilever supported horizontally extending frame, said frame being of rectangular form with the body disposed thereover from the extending end, means on the frame for supporting vertically and laterally movable arms, shoring plates on said arms at the sides and top movable outwardly against the inner surface of the walls and roof by said arms, said side shoring plates embody an upper and lower section having spaced oppositely extending members disposed in coplanar relation to each other and said sections, said upper section being connected to said vertically movable arms for upward movement therewith.

3,880,416

FIXTURE ASSEMBLY FOR THE REPAIR OF UNIVERSAL JOINTS

Don A. Horwitz, 9024 Karlov Ave., Skokie, Ill. 60076

Filed Nov. 5, 1973, Ser. No. 412,602
Int. Cl. B25b *1/10*
U.S. Cl. 269—152 **3 Claims**



1. A fixture to facilitate the repair and replacement of worn and damaged parts of a universal joint assembly of the type including a drive shaft carried yoke and a second yoke coupled thereto by a cross bar, said cross bar having four trunnions and a bearing cup capping and fastened to each said trunnions,

each yoke having a pair of bearing cup receiving sockets formed in opposed arms thereof, the bearing cup capped trunnions projecting into said sockets with portions of each bearing cup extending beyond said sockets outwardly of said arms of said yokes, and

means securing said bearing cups and said trunnions in said sockets of each yoke mechanically to intercouple the yokes with one another through said cross bar,

said fixture comprising a base and a pair of opposed, upstanding side walls,

support means for cradling and holding a yoke-carrying end portion of said drive shaft in place between said side walls of said fixture,

a pair of shaft means threadedly secured in said opposed side walls of said fixture for controlled movement transversely inwardly and outwardly thereof,

said shaft means having end faces directed inwardly of each said walls and adapted to abut and bear against corresponding facing end surfaces of said bearing cups to shift said cups and the cross bar axially within said sockets and center the cross bar within the second yoke,

push plates carried on each said shaft means of said fixture at inwardly projecting ends thereof for in-line abutment against said cups capping said trunnions of the cross bar, the overall radial expanse of said push plates exceeding that of said cups whereby marginal portions of said push plates extend radially beyond said cups to define a gauging slot between said marginal portions of said push plates and facing walls of the second yoke,

vise means carried by said fixture and shiftable inwardly of said opposed side walls thereof to bear against and to hold the second yoke in selectable positions between said walls of said fixture,

flat areas on outer surfaces of walls of the second yoke constituting reference planes for positioning the cross bar transversely of the yoke to establish the intersection of the cross bar on a longitudinal axis of the drive shaft,

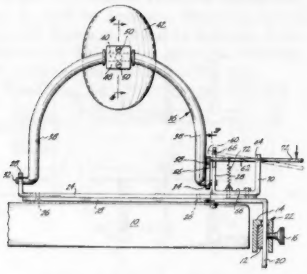
whereby, when abutted against said bearing cups, said marginal portions of said push plates of said fixture and the flat areas of the second yoke define therebetween at opposed ends of the cross bar a slot adapted for insertion of feeler gauges therewithin to facilitate the transverse centering of the cross bar with respect to the second yoke and the longitudinal axis of the drive shaft.

3,880,417

SURGICAL APPLIANCE

Lenard A. Burris, and Theodore L. Burris, both of 15310 Ashworth Ave., North, Seattle, Wash. 98133

Filed Feb. 4, 1974, Ser. No. 439,001
Int. Cl. A61g *13/00*
U.S. Cl. 269—328 **6 Claims**



1. A surgical appliance for use on a surgical table during leg surgery, comprising:

a base member including means for attachment to one side of a surgical table and shaped to extend inward of the table edge in overlying relation to said table;

an unobstructed arch member pivotally associated at the lower ends of its legs with said base member and disposed laterally of said table edge above said base member at a location on said table to traverse the lower portion of a patient's limb and the patient's foot to be placed therein and resting on said base member;

securement means between said base member and one of the said legs of said arch member for maintaining the latter in a selected angular relationship to the upper surface of said table and with respect to a selected angular disposition of a patient's limb bent at the knee as for surgery in the region of the knee; and

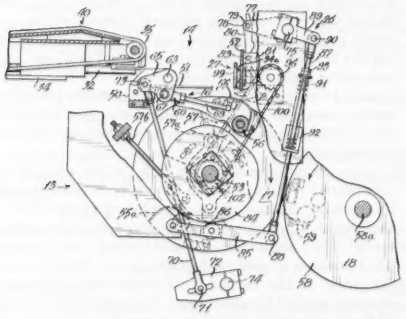
a saddle pivotally mounted on said arch member at its apex of a size and shape to bear on an appropriate surface area of the front lower portion of the patient's limb.

3,880,418

COLLATOR FOR PRINTED SHEETS

Kermit E. Swanson, Naperville, Ill., assignor to R. R. Donnelley & Sons Company, Chicago, Ill.

Filed June 15, 1973, Ser. No. 370,522
Int. Cl. B65h *39/02*
U.S. Cl. 270—54 **13 Claims**



11. In a collator which includes an endless gathering chain provided with spaced carriers to deliver collated printed sheets for binding, and a series of printed sheet supply boxes aligned beside the conveyor chain for feeding printed sheets onto said carriers as the latter move past said boxes, in combination:

a supply box frame;

a hopper on top of said frame with horizontal support means to hold a small stack of generally horizontally disposed printed sheets, said hopper having a front wall;

arcuate guide means at the front of the hopper above the plane of the horizontal support means to guide downwardly the leading edges of sheets fed into said hopper from the rear;

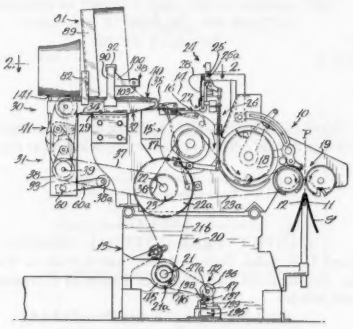
and gripper means beneath the hopper from engaging the bottom printed sheet in the stack near its leading edge to pull said sheet downwardly and forwardly out of the stack for feeding onto a conveyor chain carrier.

3,880,419

APPARATUS FOR FEEDING PRINTED SHEETS

Kermit E. Swanson, Naperville, Ill., assignor to R. R. Donnelley & Sons Company, Chicago, Ill.

Filed June 15, 1973, Ser. No. 370,521
Int. Cl. B65h *3/04, 29/18*
U.S. Cl. 271—3.1 **27 Claims**



1. Apparatus for feeding printed sheet material to a supply box of a collating machine which has a machine frame, a printed sheet supply hopper which holds a small vertical stack of printed sheets surmounting said frame toward the front thereof, said hopper having a front plate, drive means on the machine frame, and means mounted in the machine frame and driven by said drive means for withdrawing sheets by their leading ends seriatim from the bottom of the stack at a predetermined rate and delivering them to a gathering chain which travels along the front of the machine frame, said apparatus comprising, in combination:

a feeder frame which includes a horizontal conveyor section and a structurally integral drive section depending from said conveyor section, said feeder frame being adapted to be positioned with the forward part of the conveyor section overhanging the machine frame and the drive section immediately to the rear of the machine frame and the drive section immediately to the rear of the machine frame, the front of the conveyor section defining the rear of the sheet supply hopper, and the feeder frame being bodily movable fore and aft with respect to the machine frame to vary the length of said sheet supply hopper for handling sheets of different sizes;

conveyor means in the feeder frame conveyor section, said conveyor means including a transverse driven shaft journalled in the conveyor section above the drive section, a plurality of drive pulleys on said driven shaft, a plurality of idler pulleys journalled in the conveyor section aligned with the drive pulleys to provide pulley sets, and endless belt trained over each pulley set to form a top conveying

run and a return run, and belt supporting and guiding means beneath the belt conveying runs, said belt conveying runs being inclined upwardly from the rear of the conveyor section to provide a reserve stack holding area, and the forward portions of said conveying runs being inclined downwardly from the rear for a short distance;

an input shaft journalled in the lower portion of the feeder frame drive section parallel to the driven shaft;

drive transmission means in the drive section operatively connecting said input shaft to said driven shaft;

means for driving said input shaft;

printed sheet guide and confining means operatively associated with the reserve stack holding area to hold a large reserve stack of printed sheets which rests directly on the belt conveying runs close to the front of the upwardly inclined portion of said runs, said guide and confining means including rear guides toward the rear of said holding area and metering roller means at the front, said guide and confining means being adjustable laterally and longitudinally to confine printed sheets of different sizes;

means for adjusting the vertical position of the metering roller means to produce shingled streams of different depths;

means in the printed sheet supply hopper for sensing when the top of the small stack of printed sheets therein is between an upper level and a lower level;

and means controlled by said sensing means for causing driving of the conveyor driven shaft only when the height of said small stack is between said two predetermined levels, to draw printed sheets from beneath the reserve stack and feed them in a shingled stream to the supply hopper.

3,880,420

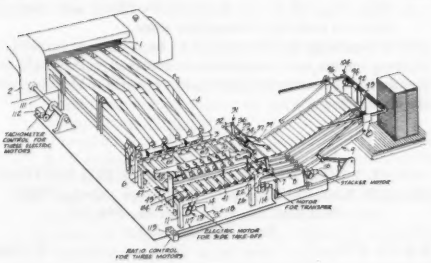
CONVEYOR SYSTEM FOR CONVEYING SHEETS

Merrill D. Martin, No. 2 Mall Ct., Oakland, Calif. 94611

Continuation of Ser. No. 276,088, July 28, 1972, abandoned. This application Apr. 5, 1974, Ser. No. 458,308

Int. Cl. B65h *29/66*

U.S. Cl. 271—184 **7 Claims**



1. A conveyor system for conveying sheets from a multiple-cut sheet making machine to a stacker device, said machine including

means discharging multiple-cut sheets from said machinery in substantially parallel rows,

said system comprising a constant velocity delivery conveyor conveying said parallel rows of sheets from said discharging means,

a side take-off conveyor receiving each row of sheets directly as discharged from said delivery conveyor and moving said sheets sidewise relatively to the direction of delivery from said delivery conveyor and toward said stacker device,

driving means for said take-off conveyor,

means synchronizing said driving means with the velocity of discharge of the rows of sheets from said machine so that subsequent rows of sheets delivered from said delivery conveyor are superimposed on the respective sheets of the preceding delivered rows of sheets moving on said take-off conveyor thereby to form bundles of superimposed sheets, the number of sheets in each bundle discharged from said take-off conveyor corresponding to not more than the number in the multiple cut,

and means to delay change of velocity of said take-off conveyor for a period substantially equal to the period of travel from said discharge means to said take-off conveyor of the last row of sheets cut previously to such change of discharge velocity.

3,880,421

METHOD AND ARRANGEMENT FOR HANDLING STREAMS OF SHEET GOODS

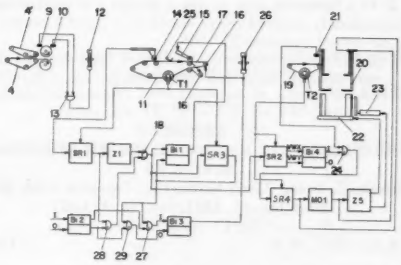
Hans Müller, Zofingen, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland

Filed May 7, 1973, Ser. No. 358,096

Claims priority, application Switzerland, May 8, 1972, 6807/72

Int. Cl. B65h *33/12*

U.S. Cl. 271—259 **14 Claims**



8. An arrangement for handling streams of sheet goods, particularly lapped streams of folded paper sheets, comprising, in combination, conveying means for conveying a stream of sheet goods along a predetermined path; separating means for separating said stream of sheet goods into successive stream segments separated from each other in the direction of said path by separating gaps; gap-detecting means located at a predetermined part of said path and operative for generating a gap-detecting signal upon travel of a gap in said stream past said gap-detecting means; gating means operative upon creation of a separating gap by said separating means for generating a gating signal after elapse of a delay time interval, and including synchronizing means for generating a synchronizing pulse each time said conveying means moves a predetermined fixed distance, and means for causing said time interval to have a duration dependent upon the time interval required for the generation of a preselected number of said synchronizing pulses and corresponding substantially to the time required for the separating gap to reach said gap-detecting means; and stream-travel monitoring means operative in response to concurrent generation of both a gap-detecting signal and a gating signal for indicating travel past said gap-detecting means of a gap created by said separating means while not indicating travel past over gap-detecting means of gaps not created by said separating means

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3,880,422

GYMNASTIC POLE AND PROCESS OF MAKING SAME

Robert Boggild, and William L. Dale, both of Cincinnati, Ohio, assignors to Flexi-Dyne Incorporated, South Pittsburgh, Tenn.

Filed May 7, 1973, Ser. No. 357,665

Int. Cl. A63b *9/00*

U.S. Cl. 272—60 R **2 Claims**

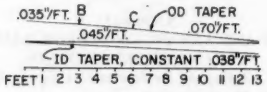
1. A fiberglass pole having a butt end adapted to be

mounted in a socket and a tip at the end of said pole opposite said butt end, said pole comprising,

an elongated pole of circular cross section,

the outside surface of said pole being tapered from butt end to tip,

the outside surface of said pole at the lower portion adjacent said butt end having a taper of approximately .035 inch per foot, the central portion having a taper of approximately .045 inch per foot, the upper portion of said pole having a taper of approximately .070 inch per foot, the inside diameter of said pole having a uniform taper of approximately .038 inch per foot.



2. In a fiberglass pole having a plurality of predominantly longitudinally oriented fibers joined by a curable binder, the improvement comprising,

a plastic sheath surrounding said pole, said sheath being a very flexible, ultraviolet-absorbent, polyvinyl fluoride.

3,880,423

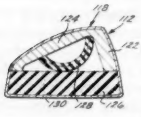
BASEBALL BAT HAVING DIFFERENT STRIKING SURFACES

Malcolm G. Kreag, 22669 Nadine Cir., Torrance, Calif. 90505

Filed Jan. 15, 1973, Ser. No. 323,857

Int. Cl. A63b *69/40*

U.S. Cl. 273—26 B **5 Claims**



1. A game instrument which comprises an elongated, generally rigid body having handle means proximate one end thereof and elongated ball striking means proximate the other end thereof, said striking means comprising a plurality of different elongated batting surfaces of successively increasing ball controllability but respectively of successively decreasing ball reactivity, said striking means comprising a channel-shaped portion of said body defining at least one of said striking surfaces, and bridging means extending between the edges of said channel-shaped body portion defining another of said striking surfaces, said channel shaped portion of the body and said bridging means being composed of different materials, and the material of said channel-shaped portion being substantially more rigid than the material of said bridging means.

3,880,424

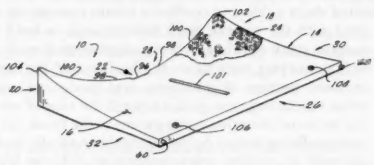
SHAKERBOARD FOR BOWLING PINSETTERS

Harry C. Bockelman, 1902 S. Volutsia, Wichita, Kans. 67211

Continuation-in-part of Ser. No. 236,075, March 20, 1972, Pat. No. 3,751,036. This application June 4, 1973, Ser. No. 366,973The portion of the term of this patent subsequent to Aug. 7, 1990, has been disclaimed.

Int. Cl. A63d *5/00*

U.S. Cl. 273—43 R **8 Claims**



1. A shakerboard, comprising:

a. a trough-like and sheet-like outer integrally formed resilient member of a reinforced plastic material and having upwardly turned rear corner portions having a smooth and arcuate surface and each of said corner portions having a generally tetrahedral shaped compartment therein,

b. frame means having upwardly turned corner portions supporting and shaping said upwardly turned corner portions of said outer member, with said outer member being mounted on and completely around the same frame means,

c. positioning lug means extending from a front portion of said frame through said outer member,

d. means on said frame means and said outer member to mount said shakerboard means on a means to shake same having means receiving said lug means to position said shakerboard, and

e. filler material means substantially filling said compartments to resiliently strengthen same,

said shakerboard is constructed to be used in a bowling pit clearing means to in operation receive and gather balls and pins and deliver same rearwardly to a means for handling same for further use.

3,880,425

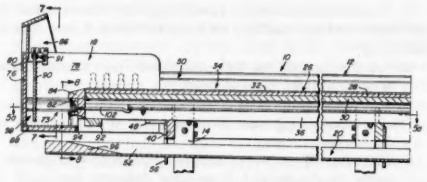
GAME TABLE WITH CABLE CONNECTED SECTIONS

Glenn W. Kintz, 910 Nelchina, Anchorage, Alaska 99501

Filed Aug. 14, 1973, Ser. No. 388,207

Int. Cl. A63d *1/02*

U.S. Cl. 273—51 **9 Claims**



1. A game table, comprising, in combination:

a. a pit section including a main frame, and an end wall, side walls, and a bottom panel attached to one another to form a pit area, the assembly of walls and panel mounted on the main frame, the pit section further including backstop assembly means for absorbing the force generated by the ball and pins and deflecting the pins into said pit area;

b. at least one alley section, the alley section including an alley bed frame and a plurality of legs arranged supporting the bed frame;
c. a shooting deck section; and
d. means for connecting together the pit, alley, and shooting deck sections, with the alley section being arranged between the pit and shooting deck sections, the means for connecting including a cable extending uninterruptedly between the pit and shooting deck sections, and rigid means adjustably connecting the cable to the pit and shooting deck sections for varying the tension on the cable and clamping the alley section therebetween.

3,880,426

WRIST AND FINGER SUPPORT FOR BOWLERS

Frank L. Morse, 2101 Pierce St., Flint, Mich. 48503

Filed Sept. 14, 1973, Ser. No. 397,444
Int. Cl. A63b *7/14*
U.S. Cl. 273—54 B **6 Claims**

1. A wrist and finger control device comprising:
a. a wrist support, the wrist support comprising:
1. a band adapted to be wrapped around the user's wrist,
2. first securement means for securing the band when wrapped around the wrist,
3. a resilient body disposed on a first surface of the band,
b. a transverse attachment member disposed on the first surface of the wrist support,
c. at least one elongated palm strap detachably adjustably connected to the transverse attachment member,
d. at least one finger stall detachably adjustably connected to the elongated palm strap, and
wherein the transverse attachment member transverses the resilient body.

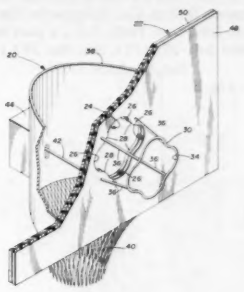
3,880,427

PROJECTILE AND CORRESPONDINGLY SHAPED TARGET INCLUDING A PROJECTILE STOP

Vernon R. Bingham, 8736 Mediterranean Dr., Dallas, Tex. 75238

Filed July 6, 1973, Ser. No. 377,080
Int. Cl. A63b *71/02*
U.S. Cl. 273—95 R **9 Claims**

3. A sailball game comprising:
a sailball including an inner spherical portion and an outer annular portion extending the periphery of the spherical portion and serving as an air foil; and
a goal including a substantially vertically disposed frontboard containing an aperture whose diameter is at least larger than the diameter of said outer annular portion of said sailball and a means disposed rearwardly said frontboard and not continuous therewith for arresting the



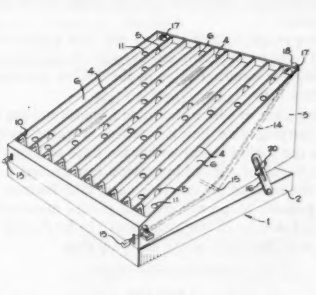
flight of said material on passing completely through said aperture.

3,880,428

TILTING ALLEY GAMES AND METHODS OF MAKING AND USING THE SAME

Kenneth McComber, 2994 Foxwood, St. Louis, Mo. 63042

Filed Oct. 12, 1973, Ser. No. 405,740
Int. Cl. A63f *7/16*
U.S. Cl. 273—110 **5 Claims**



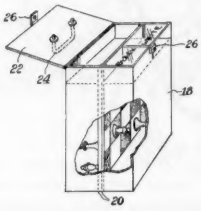
1. A ball drop game device comprising,
a base means, said base means provided with an inclined upper surface,
a plurality of elongated vertical barrier means mounted upon said upper surface of said base means, said elongated vertical barrier means thereby forming a plurality of elongated parallel channels upon the upper surface of said base means, said upper surface provided with a plurality of arcuate recesses corresponding with said channels,
a plurality of alley means, said alley means provided with tilting means for laterally tilting said alley means and the alley means being tiltably mounted on said upper portion of said base means and being provided with drop holes in said alley means, said alley means disposed within said channels and said alley means provided with arcuate lower surfaces adapted to conform to the arcuate recesses,
ball starter means operably mounted on said base means,
the aforesaid barrier means provided with apertures therein, said apertures located so as to precede the aforesaid drop holes down the inclined surface such that as a ball rolls down an inclined alley means it may be successively transferred to the next adjacent alley means via the aperture by appropriately tilting laterally the alley means currently traversed, and ball return means for returning a ball to the operator.

3,880,429

GAME BOARD, ATTACHABLE GAME PIECES AND CARRYING CASE

Jon M. Blumenaus, Dalton, Ga., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed July 27, 1973, Ser. No. 383,131
Int. Cl. A63f *3/02*
U.S. Cl. 273—136 E **1 Claim**



1. A portable game board, and playing pieces, in which the playing pieces are located, in play, on the marked external playing surface of the game board,

said game board external playing surface consisting of pieces of hooked nylon, with

the underside of each playing piece covered with brushed nylon so that the playing pieces will adhere to the external surface of the game board, without movement, regardless of the physical orientation of the game board in play or in transit,

said game board hinged along a mid line so that the game board may be folded together, with the playing surfaces forming the external sides of the folded board exposed, together with

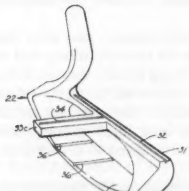
a carrying case in which the folded board may be inserted, said carrying case being fitted with guide members to retain the folded board within the case so that the external surfaces of the folded board are spaced a distance from the walls of the carrying case, said distance being of a magnitude to permit playing pieces mounted on the external surface of the game board to be free of interference with the walls of the carrying case.

3,880,430

GOLFER CLUB INCLUDING INDICATORS FOR ALIGNING GOLFER'S HEAD RELATIVE THERETO

Terrill R. McCabe, Highland Greens F 116, West Chester, Ohio 45069

Filed Sept. 17, 1973, Ser. No. 398,061
Int. Cl. A63b *69/36, 53/04*
U.S. Cl. 273—183 D **9 Claims**



1. A golf club head comprising a ball striking face, a first horizontal portion extending rearward from said striking face adjacent the top thereof, a second horizontal portion extending rearward from said striking face and vertically spaced below said first horizontal portion, first and second symbols located, respectively, on the upper surfaces of said first and second horizontal portions, one of said symbols including at least two horizontally spaced apart alignment elements which may be brought in vertical register with the other of said symbols by a golfer when addressing a golf ball, and thereby indicate the proper position of the golfer's head relative the club head along a line perpendicular to the line of club head movement necessary to propel a golf ball with said striking face.

3,880,431

GOLF TRAINING AND PRACTICE DEVICE

Earl E. Swanson, 931 Butterfield Rd., Downers Grove, Ill. 60515

Filed Aug. 13, 1974, Ser. No. 496,956
Int. Cl. A63b *69/36*
U.S. Cl. 273—183 B **6 Claims**

1. A golf training and practice device comprising a supporting structure, an actuating arm, means mounting said arm on said supporting structure for movement in directions toward and away from the head of a golfer standing in a golfing position opposite said supporting structure, means biasing said arm into engagement with the golfer's head, a member representing a simulated golf ball target, means supporting said target member on said supporting structure for movement between a first position wherein it is in a position to be struck by the golfer with a golf club and a second position wherein it is withdrawn away from the path of the golf club, and actuating means connecting said arm and the last-mentioned target member supporting means, said actuating means being responsive to movement of said arm to move said target member from said first to said second position.

3,880,432

SYNTHETIC GOLF TEE

Ronald B. Coffey, Raleigh, and James J. Burke, Jr., Durham, both of N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 29, 1972, Ser. No. 319,254
Int. Cl. A63b *69/36*
U.S. Cl. 273—195 A **8 Claims**

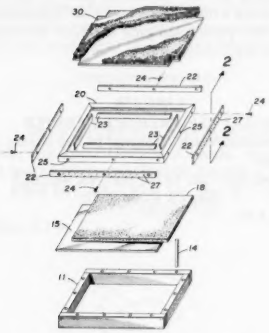
1. A synthetic golf tee comprising:

a. a subsurface,

b. a frame mounted on said subsurface, said frame being comprised of side walls defining a golf tee area, and

c. a synthetic fabric secured to said frame and covering said golf tee area, said synthetic fabric comprising a pile car-

pet of knitted construction, said pile carpet having a total yarn denier of from 3,000 to 10,000, a tuft density of



from 24 to 64 per square inch and a pile height of from one-fourth to three-fourth inch.

3,880,433

PACKING CARRIER

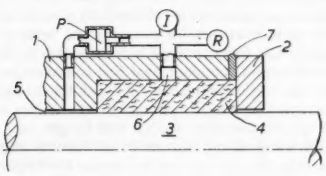
Bernard S. Nau, Bedford, England, assignor to The British Hydromechanics Research Association, Cranfield, Bedford, England

Filed Dec. 21, 1972, Ser. No. 317,288

Claims priority, application United Kingdom, Dec. 21, 1971, 059340/71; Sept. 1, 1972, 040678/72

Int. Cl. F16j *15/18*

U.S. Cl. 277—2 **36 Claims**



1. A packing sleeve for a rotary seal comprising a pre-formed cylindrical bush of soft compression packing formed of deformable fibrous material and a substantially cylindrical wire gauze enclosing said bush, said bush comprising two pre-formed, semi-cylindrical components which abut each other at separate edges defining two longitudinally extending seams.

3,880,434

SEALING DEVICE FOR SHAFT OF MACHINES

Pierre Echard, Chabeuil, and Jean Louis Lacourieux, Bour Les Valence, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

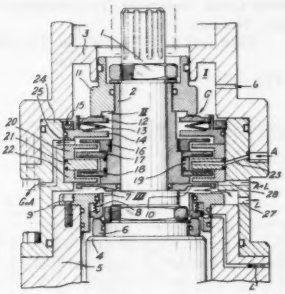
Filed Jan. 22, 1974, Ser. No. 435,501

Claims priority, application France, Jan. 29, 1973, 73.03049

Int. Cl. F16j *15/40*

U.S. Cl. 277—15 **14 Claims**

1. A sealing device for shaft ends connecting two machines containing respectively fluids which have to be prevented from mixing with each other, wherein said device is constituted by a first dry-friction seal which prevents the first fluid from penetrating into an intermediate chamber, a second dry-friction or lubricated seal which prevents a second fluid from penetrating into the same intermediate chamber, said chamber being intended to collect leakages of the first and second fluids and being in turn divided into two compartments separated by an annular device for receiving an auxiliary fluid which is intended to prevent mixing of the first and second



fluids, each compartment aforesaid being connected to a circulation system for recovering the mixture of auxiliary fluid with said other fluids respectively through corresponding extraction orifices.

3,880,435

SEALING RING FOR TURBO MACHINES

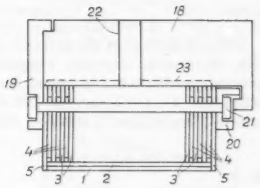
Per Gosta Thornbald, Finspong, Sweden, assignor to Stal-Laval Turbin AB, Finspong, Sweden

Filed Dec. 19, 1973, Ser. No. 426,311

Claims priority, application Sweden, Jan. 5, 1973, 73001588

Int. Cl. F16j *15/44*

U.S. Cl. 277—53 **7 Claims**



1. Sealing ring for a turbo machine for limiting and defining the radial clearance between the outer edges of the vanes of a turbine rotor disc and the corresponding stator housing, the sealing ring being composed of a plurality of sealing block segments which are mounted circumferentially on the stator housing, spaced from each other by peripheral gaps, cooled by air flowing through them, and which comprise:

a smooth arcuate metallic strip on the inner surface of each sealing block segment facing the turbine rotor disc;

a sinusoidally corrugated metallic strip mounted on the radially outward side of said smooth metallic strip so that its inner corrugations are secured to said smooth metallic strip along the lines of contact between said two strips; and

a stack of parallel flat metallic sheets mounted on the radially outward side of said corrugated metallic strip, the faces of said metallic sheets being oriented transversely to the corrugations of said corrugated metallic strip and perpendicular to the turbine shaft, said metallic sheets being divided into sectors having a width corresponding to the pitch of the corrugations of said corrugated strip, the inner edge contour of said sheet sectors being so adapted to the shape of said corrugated strip that a chan-

nel for cooling air is formed between said corrugated strip and sectors of said sheet stack.

3,880,436

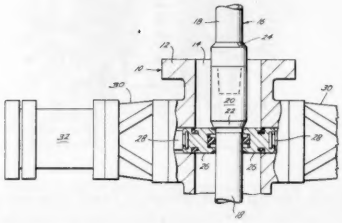
RAM BLOCK

Jose Roberto Canal, Beaumont, Tex., assignor to The Rucker Company, Houston, Tex.

Filed July 5, 1973, Ser. No. 376,562

Int. Cl. F16j *15/00*

U.S. Cl. 277—126 **10 Claims**



1. A ram block comprising,

a body portion formed of an alloy having an upper hardness level of about Rc22 and having an arcuate opening at its inner portion for engaging pipe and tool joints in a string of pipe, and

a supporting inner edge portion at its arcuate opening formed of a work hardenable alloy of an upper hardness level of about Rc22 when relatively stressfree and capable of work-hardening to a hardness level of at least about Rc35 upon deformation, engagement with and deformation by one of the tool joints by the load of the string of pipe work hardening the alloy sufficiently to indent itself into the tool joint.

3,880,437

CHUCK FOR MACHINE TOOLS

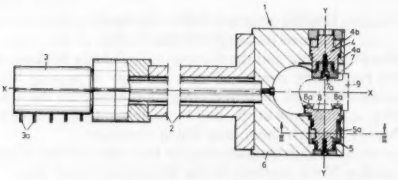
Hans Scharfen, Meerbusch, Germany, assignor to Paul Forkardt Kommanditgesellschaft, Dusseldorf, Germany

Filed Nov. 27, 1972, Ser. No. 309,648

Claims priority, application Germany, Nov. 25, 1971, 2158427

Int. Cl. B23b *31/34*

U.S. Cl. 279—5 **2 Claims**



1. A clamping chuck rotatable about a first axis for machine tools with exchangeable clamping jaws at least one of which is radially adjustable for chucking a work piece provided with clamping webs, which includes: a clamping mechanism associated with said radially adjustable jaw for radially adjusting the latter, a swivel mechanism operatively connected to at least one of said clamping jaws for pivoting the same about a second axis by a predetermined pivot angle whereby in combination with the rotation of said chuck a work piece can be machined at one setting according to two axes, said clamping jaws being each provided with two prism-shaped clamping surfaces for receiving the work piece at its clamping webs, said clamping sufaces being so arranged as to form the four corners of an imaginary tetrahedron-shaped three-dimensional body, said clamping jaws including clamping mounts forming the work piece clamping means proper and being selectively adjustable relative to the remaining part of the respective clamping jaw along a line transverse to the longitudinal extension of said work piece clamping surfaces for obtaining an offset center of the clamping jaws.

3,880,438

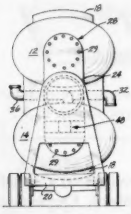
MULTI-USE FREIGHT CARRIER

Leo A. Klein, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 18, 1974, Ser. No. 462,053

Int. Cl. B60p *3/22*

U.S. Cl. 280—5 D **2 Claims**



1. A carrier for freight comprising:

A. a first container;

B. a second container;

C. a vehicle chassis;

D. means operably connected to said first container and said second container for holding said first container and said second container in substantially parallel relationship with each other and for changing the vertical displacement of said first container in relationship to the position of said second container, said first container being at the top of its vertical displacement capability for operation of the carrier for freight with said first container empty and said second container loaded with freight, said first container being at the bottom of its vertical displacement capability for operation of the carrier for freight with said first container loaded with freight and said second container empty, said changing of the vertical displacement of said first container in relationship to the position of said second container is accomplished by rotating said first container and said second container about a common axis in combination said means for holding said first container and said second container in substantially parallel relationship with each other and for changing the vertical displacement of said first container in relationship to the position of said second container comprising:

a. a front joining plate attached to one end of said 1ˢrst container and one end of said second container;

b. a rear joining plate attached to the other end said first container and the other end of said second container;

c. a front main shaft carried by said front joining plate;

d. a rear main shaft carried by said rear joining plate, said front main shaft and said rear main shaft being located along an axis substantially midway between said first container and said second container, said axis being said common axis of rotation of said first container and said second container in combination;

e. means carried by said chassis for rotatably supporting said front main shaft and said rear main shaft and for raising and lowering said front main shaft and said rear main shaft in combination to allow said first container and said second container to clear said chassis when said first container and said second container are rotated in combination; and

f. means for rotating said first container and said second container in combination; and

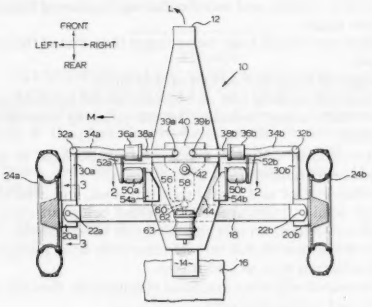
E. said chassis carrying said means for holding said first container and said second container in substantially parallel relationship with each other and for changing the vertical displacement of said first container in relationship to the position of said second container.

3,880,439

SELF STEERING MECHANISM

Karl Wolter, Clarkson, Ontario, Canada, assignor to Levy-Russell Limited, Toronto, Ontario, Canada

Filed Dec. 20, 1973, Ser. No. 426,906
Int. Cl. B62d *53/06*
U.S. Cl. 280—81 A **9 Claims**



1. A self-steering mechanism for the trailing wheels of a vehicle, comprising:

1. suspension means for said vehicle,

2. means mounting said wheels to said suspension means so that said wheels tend to steer in the direction of a forward turn of said vehicle,

3. steering linkage means interconnecting said wheels,

4. locking means connected between said suspension means and said steering linkage means, said locking means having a first normal condition and a second operative condition,

5. said locking means including means operative when said locking means is in its first normal condition to bias said steering linkage means towards a centre position in which said wheels are in a straightened position, and to prevent movement of said steering linkage from said centre position thus preventing steering of said wheels; said locking means when in said second operated condition permitting movement of said steering linkage means and hence permitting steering of said wheels,

6. valve connected with said steering linkage means and operative in response to steering pressure of a said wheel,

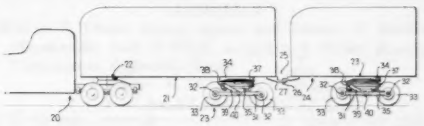
7. and means connecting said valve means to said locking means for operation of said valve means to operate said locking means to its second condition thereby to permit steering movement of said wheels, said valve means being responsive to termination of such steering pressure to terminate operation of said locking means, whereby said locking means then biases said steering linkage to its said centre position.

3,880,440

STEERABLE TRUCK WITH REVERSIBLE CASTERING WHEEL STRUCTURE FOR TRAILERS

Hubert Tidewell, Box 57, Wellington, Utah 84542

Filed Aug. 12, 1974, Ser. No. 496,901
Int. Cl. B62d *13/06*
U.S. Cl. 280—81 A **9 Claims**



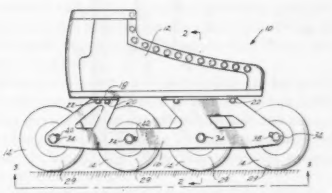
1. A steerable truck for articulated vehicles comprising a pair of superposed plate members the upper one of which is adapted for fixed attachment to the bottom of a trailer body or the like, a pair of fore and aft spaced pins rigidly interconnecting said plate members in spaced relation, a wheeled truck frame underlying said plate members, an intermediate frame disposed between said plate members for movement relative thereto and having fore and aft recess means spaced sufficiently greater than the spacing of the king pins so as to be selectively engageable with one or the other of said fore and aft pins to form a caster-like pivotal connection therewith, and rigid members interconnecting said intermediate frame and said underlying wheeled truck frame, whereby relative movements of the wheeled truck frame and said trailer body cause shifting of said intermediate frame relative to said fore and aft pins.

3,880,441

TANDEM ROLLER HOCKEY SKATE

Morris L. Silver, Los Angeles, Calif., assignor to Super Skate Incorporated, Marina, Del Rey, Calif.

Continuation-in-part of Ser. No. 274,191, July 24, 1972, abandoned. This application Nov. 8, 1973, Ser. No. 413,775
Int. Cl. A63c *17/06*
U.S. Cl. 280—11.22 **9 Claims**

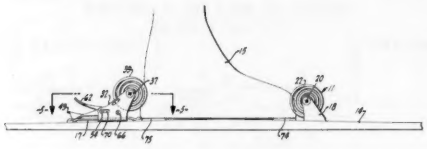


1. A tandem roller hockey skate comprising a boot for receiving a foot of a user and adapted to provide support for the ankle of the user's foot, the boot also having a foot-supporting base, rigid roller supporting means extending down from the underside of the foot-support base, means for rigidly attaching the roller support means to the foot-support base, a set of four longitudinally spaced apart rollers mounted in tandem on the roller support means, the roller including a front roller, two intermediate rollers, and a rear roller, each roller being at least about 2¾ inches in diameter and having a ground-engaging portion made of a relatively stiff material adapted to provide substantial lateral rigidity during use, the rollers being mounted to the roller support means so they are engageable with the ground in unison, the front roller being mounted to the roller support means so its axis of rotation is forward of the tip of the foot-support base, and in which the rear roller is mounted to the roller support means so its axis of rotation is behind the tail end of the foot-support base.

3,880,442
SKI BINDING

Jack M. Humbert, 205 S. Blake Rd., Opportunity, Wash. 99214

Filed Aug. 8, 1973, Ser. No. 386,734
Int. Cl. A63c 9/08
U.S. Cl. 280—11.35 T 17 Claims

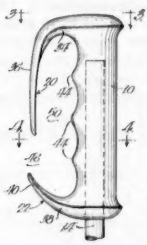


1. A safety binding for snow skis and the like comprising:
a. front and rear foot-engaging components adapted to be mounted upon such ski in axially spaced relation therealong, at least one of said components including stress responsive release structure having a coil spring supported in a generally horizontal transverse orientation about a substantially fixed center, the turns of said spring being axially displaceable relative to such fixed center upon engagement by such foot to bind the same to a ski, said coil spring being responsive to development of a stress in excess of a predetermined magnitude to release a foot from said binding and such ski.

3,880,443
STRAPLESS SKI POLE GRIP

James E. Tobin, Ketchum, Idaho, assignor to Scott USA, Sun Valley, Idaho

Filed Aug. 27, 1973, Ser. No. 391,690
Int. Cl. A63c 11/22
U.S. Cl. 280—11.37 H 15 Claims

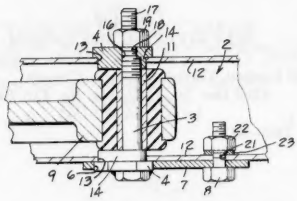


1. A strapless ski pole grip, comprising:
an elongated body member having an axial bore for receiving the shaft of a ski pole and a grip section for containing the fingers of the skier's hand,
a resilient projection having a lateral section extending outwardly from one end of said body member and an axial section extending generally perpendicular to the lateral section and generally parallel with the axial bore, said lateral and axial sections defining with said body member a channel for containing a skier's hand when grasping the elongated body member,
the axial section being adjacent the skier's hand with a length corresponding to at least the majority of the length of the grip section and of resilient structure which presses against the skier's hand to retain the skier's hand even when the skier is not firmly grasping the body member, and the resilient structure of the axial section having a resiliency to deflect and release the skier's hand when the ski pole becomes trapped during use.

3,880,444
MEANS TO ADJUST WHEEL SUPPORT PIVOT SHAFT

Alvin C. Bridges, 1099 California Dr., Burlingame, Calif. 94010

Filed Feb. 22, 1974, Ser. No. 444,738
Int. Cl. B62d 17/00
U.S. Cl. 280—96.2 B 1 Claim



1. In a means to adjust a wheel support pivot shaft in a frame member of a vehicle, said member having registering holes for said pivot shaft,
the diameter of said holes being larger than that of the pivot shaft,
a polygonal head on one end of said shaft,
a cylindrical smooth hub on the face of the head adjacent the shaft, being, rotatable in the adjacent hole in the frame,
said one end of said shaft being fixed to said head so as to be located eccentrically to said hub,
the other end of said shaft being threaded, and a substantially semi-cylindrical portion thereof being cut away,
a removable head on said threaded end of said shaft,
a cylindrical smooth hub on said removable head fitting into the adjacent hole in said frame,
said threaded end being extended eccentrically through said hub and removable head,
said removable head having a passage therethrough conforming in shape to said semi-cylindrical portion thereby to coordinate the relative position of said heads and hubs, said threaded end extending beyond said removable head, a tightening nut on said extended end to hold said removable head in position,
a locking arm on the outside of the frame member adjacent said polygonal head,
said locking arm having a polygonal socket therein fitting entirely over said polygonal head,
and releasable means to fixedly secure said locking arm in locking position on said frame member thereby to prevent rotation of said heads, said hubs and said pivot shafts.

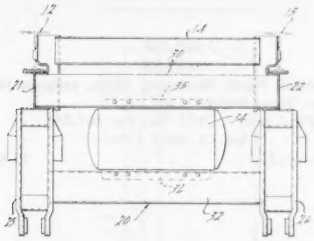
3,880,445
INTEGRAL TRAILER SUSPENSION CROSSMEMBER SUPPORT - AIR RESERVOIR STRUCTURE

George Chieger, Birmingham, Mich., assignor to Fruehauf Corporation, Detroit, Mich.

Filed May 10, 1974, Ser. No. 468,828
Int. Cl. B62d 25/00
U.S. Cl. 280—106 R 5 Claims

1. A combined wheel suspension and air reservoir support structure for a road vehicle comprising in combination with a frame having spaced generally parallel side rails extending longitudinally of the vehicle, a transversely extending cross brace member rigidly secured to and joining said side rails, a pair of vertically extending wheel supports, one extending downwardly from each juncture of said cross brace member with one of said side rails and also rigidly secured with respect to said rails and cross brace member, a second cross brace member extending transversely between and rigidly joined to said wheel supports spacedly below and in the same vertical plane as and parallel to the first-mentioned cross brace mem-

ber, a rigid tank having a cylindrical body of a diameter slightly less than the vertical distance between said cross brace members, and positioned therebetween with its axis parallel to



and in said same vertical plane as said cross brace members, and means joining the body of the tank to both of said cross brace members throughout substantially the full length of the top and bottom of the tank.

3,880,446

HYDROPNEUMATIC SUSPENSION FOR LAND VEHICLES ESPECIALLY TRACKED VEHICLES

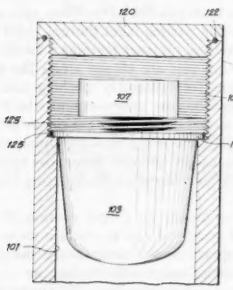
Christian Müller, Erlangen-Bruck, Germany, assignor to Frieseke & Hoepfner GmbH, Erlangen-Bruck, Germany

Filed Nov. 12, 1973, Ser. No. 414,828

Claims priority, application Germany, Nov. 11, 1972, 2255348

Int. Cl. B60g 11/28

U.S. Cl. 280—124 F 8 Claims



1. A hydropneumatic suspension adapted to be interposed between a body member and a wheel member of a land vehicle, said suspension comprising:

housing means forming a chamber containing a hydraulic medium connected to one of said members, and a displacement element in said chamber for displacing said medium and connected to the other member;

means in said housing means forming a main gas cushion pressurizable by said hydraulic medium;

means in said housing means forming a storage gas cushion; and

a valve assembly in said housing means directly interconnecting said main gas cushion and said storage gas cushion out of contact with said medium and effective to enable storage of pressure in said storage gas cushion upon pressurization of said main gas cushion and to feed pressure from said storage gas cushion to said main gas cushion upon relief of said main gas cushion, said assembly comprising at least one valve member interposed between said gas cushions, a control piston engageable with said valve member, means for applying the pressure of said main gas cushion to one side of said control piston and a throttle for controlled equalization of pressures on opposite sides of said control piston.

3,880,447

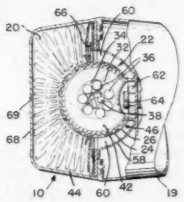
CRASH RESTRAINT INFLATOR FOR STEERING WHEEL ASSEMBLY

William F. Thorn, Mercer Island, and Thomas W. Smelser, Woodinville, both of Wash., assignors to Rocket Research Corporation, Redmond, Wash.

Filed May 16, 1973, Ser. No. 360,682

Int. Cl. B60r 21/08

U.S. Cl. 280—150 AB 11 Claims



1. In combination with an automobile steering assembly wherein there is a steering wheel and a central support structure, a crash restraint apparatus adapted to protect a driver of the automobile from impact with said steering assembly or other automobile structure, said apparatus comprising:

a. a collapsed inflatable mounted generally adjacent said central structure and disposed so that upon being inflated the inflatable is positioned between said driver and said steering assembly,

b. an inflating device to provide inflating gas for said inflatable to deploy said inflatable to a protective position, said inflating device having a longitudinal axis and comprising:

1. an elongate outer housing having a generally cylindrical lateral circumferential surface generally surrounding said longitudinal axis,

2. said device having in said housing an inner gas generating zone having a gas producing composition located generally along said longitudinal axis,

3. said device having in said housing a gas conditioning zone having a gas filtering composition positioned radially outwardly of, and substantially surrounding, said gas generating zone to receive a combustion product from said gas producing composition and remove at least one undesired component from said combustion product to provide inflating gas for said inflatable,

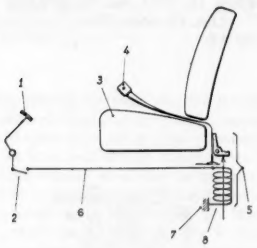
4. said housing having a plurality of outlet openings located about a substantial portion of said lateral circumferential surface whereby inflating gas passes from said housing through said outlet openings in a diverging pattern,

c. said inflating device being located generally within and proximate said steering wheel, and positioned with its longitudinal axis having a substantial vector component generally parallel to a plane defined by said steering wheel.

3,880,448
SAFETY BELTS WITH DECELERATION RELEASE CONTROL

Paul Lipschutz, Neuilly-sur-Seine, France, assignor to Societe d'Exploitation des Brevets Neiman, Neuilly-sur-Seine (Hauts de Seine), France

Division of Ser. No. 47,322, June 18, 1970. This application Nov. 14, 1972, Ser. No. 306,408
Claims priority, application France, June 20, 1969, 69.20632
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 SB **4 Claims**

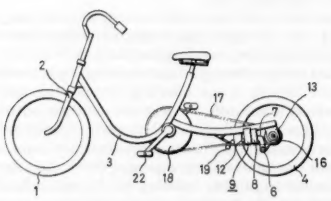


1. A safety belt anchoring device for use with safety belts for passengers in vehicles comprising: a seat belt webbing, a fastener for anchoring a belt end and a base plate one end of which is adapted for anchoring the belt end to a point in a vehicle; slide means fixed to said fastener and movable on said base plate for moving said fastener, and means in said base plate for guiding said slide means when moving along said base plate; resilient reaction springs for connecting said belt fastener to said one end of the base plate and permitting a certain amplitude of free movements by the passenger; a pivoting pawl fixed on said base plate and having a hook portion for locking said slide means by engaging said hook in perforations in said slide means; control means for activating said pawl for locking said slide means in response to a sudden deceleration of the vehicle, and resilient means for returning said pawl to its normal position wherein said slide means is unlocked.

3,880,449
TRICYCLE

Hiroshi Wada, Hamamatsu, Shizuoka, Japan, assignor to Suzuki Motor Co., Ltd., Shizuoka, Japan

Filed July 29, 1974, Ser. No. 492,933
Int. Cl. B62m *1/02*
U.S. Cl. 280—261 **5 Claims**

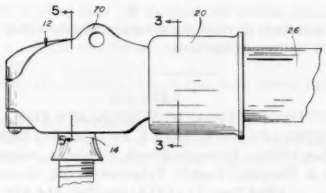


1. A tricycle of the construction having one front and two rear wheels supported by front forks and a body frame, comprising an axle frame rotatably supporting the two rear wheels at the both ends, means secured to the rear portion of the body frame for resiliently supporting the axle frame at about its center point, means secured to the rear end of the body frame for supporting a driven shaft on which a driven sprocket is fixedly mounted, and a universal joint for connecting the axle of at least one rear wheel with the driven shaft, the centerline of oscillation of the axle frame relative to the body frame being in agreement with the center of said universal joint.

3,880,450
COUPLER

Nathan C. Ware, North Muskegon, Mich., assignor to Lear Siegler Inc., Santa Monica, Calif.

Filed June 7, 1973, Ser. No. 367,855
Int. Cl. B60d *1/06*
U.S. Cl. 280—512 **11 Claims**



1. In a coupler for a trailer wherein a ball is secured to a vehicle and said coupler has a body and a cap hinged together at a front portion with a substantially vertical pin so that said cap pivots about a front portion of the body, said body and cap being closeable along parting faces thereof, each of said body and cap having internal recesses forming a cavity for said ball when said body and cap are closed along the parting faces thereof; and means for releasably latching said cap to said body in closed position; the improvement which comprises;

said body recessed cavity forming a major portion of said ball cavity and including a concave upper surface which extends substantially laterally across the upper surface of said ball cavity and forms a self-centering bearing surface for said ball;

load distributing means on a rear portion of said parting faces of said body and cap to restrain movement of said cap with respect to said body along the parting faces thereof in a direction parallel to the pin;

whereby the load on said coupler is distributed between said hinge on the front of said coupler and said load distributing means at a rear portion thereof.

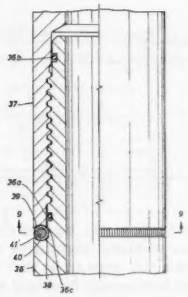
3,880,451
FORCE TRANSMITTING COUPLING

Robert B. Kinzbach, 6203 Valley Forge, Houston, Tex. 77027

Division of Ser. No. 19,249, March 13, 1970, Pat. No. 3,662,867. This application May 1, 1972, Ser. No. 248,936
Int. Cl. F16l *55/00*
U.S. Cl. 285—92 **4 Claims**

1. In combination with two relatively movable members concentrically engageable at abutting ends and having means for gradually urging said members together along their common axis, each of said members being provided with an annular raceway in axially registering relation to one another, a device for transmitting force between said members comprising an annular coil spring having a solid core element positioned within the convolutions of said spring, said convolutions being disposed between said axially registering raceways so as to be urged into gripping engagement with the raceway

surfaces when said members are urged together, said solid core element being sized such as to prevent said convolutions



from being distorted beyond their elastic limit thereby causing permanent set of said spring.

3,880,452

CONNECTORS

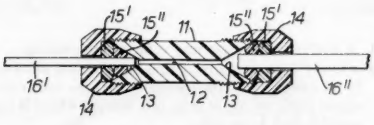
Robert E. Fields, 2 Regent St., Cambridge CB2 1DB, England

Filed Apr. 19, 1973, Ser. No. 352,796

Claims priority, application United Kingdom, Apr. 27, 1972, 19608/72

Int. Cl. F16l *47/00*

U.S. Cl. 285—177 **5 Claims**



1. A connector for receiving and sealing the end of a hollow tube and used to interconnect tubes of different diameter comprising:

a flexible inner tubular member having a central through passage having a diameter approximately equal to that of the smallest tube to be accommodated with a concave frustro-conical orifice at one end thereof opening from the central through passage to a diameter approximately equal to the largest tube to be accommodated to receive the end of the tube;

at least one cylindrical, resilient ring seal surrounding the tube and disposed within a portion of the frusto-conical orifice;

a substantially cup-shaped, flexible outer cap having a central aperture of a diameter approximately that of the largest tube to be accommodated to receive the tube, and a side wall for surrounding the inner tubular member;

a male screw thread formed on the outer surface of the inner tubular member; and

a cooperating female screw thread formed on the inner surface of the cup-shaped member for retaining said cup-shaped member in position on said tubular member so that said at least one ring seal will be compressed both axially with respect to said tubular member, and radially due to the surface defined by the fustro-conical orifice.

3,880,453

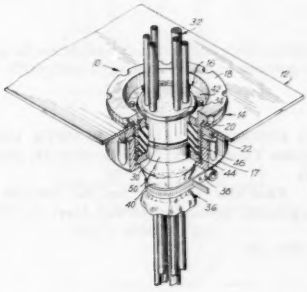
PROCESS FOR SEALING CABLE AT FITTINGS

Robert A. Philibert, Burlington, Conn., and Robert F. Polimine, Lynbrook, N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Filed Sept. 6, 1973, Ser. No. 394,909

Int. Cl. H02g *15/00*

U.S. Cl. 285—161 **10 Claims**



6. Apparatus for providing sealing of an opening in a console or the like through which a group of cables extend into a pressurized environment or the like, comprising:

a nipple assembly adapted to surround said group of cables and adapted to be connected to said console or the like;

a sealing assembly, including a pair of axially spaced rings and a resilient sealing ring extending between said axially spaced rings, all of said rings being split so that said sealing assembly is adapted to be placed around an already extended group of cables and to be positioned inside said nipple assembly;

a sealing-compound-retaining means comprising a tube in two sections, adapted to be placed around said group of cables and thence to be disposed within said sealing assembly and to be engaged by the resilient sealing ring, and a sleeve attached to said tube and extending below the lower end of said tube;

a sealing compound contained within said tube and retained by said tube and attached sleeve so as to surround said group of cables and to provide sealing of said environment.

3,880,454

BUMPER FOR VEHICLES, ESPECIALLY MOTOR VEHICLE

Fritz Haberle, and Daniel Riechers, both of Sindelfingen, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Nov. 6, 1972, Ser. No. 304,051

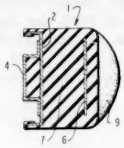
Claims priority, application Germany, Nov. 5, 1971, 2155018

Int. Cl. B60r *19/08*

U.S. Cl. 293—71 R **13 Claims**

1. A bumper having a predetermined curvature, for vehicles, especially for motor vehicles, which bumper is adapted to be horizontally disposed on the motor vehicle and span the width thereof, the bumper comprising: a rigid back wall means, an impact-distributing means arranged in front of said back wall means and embedded in a foamed material provided with an outer cover means, said impact-distributing means being constructed as a flat profile member conforming to the curvature of the bumper and extending up to the end area of the end portions of the bumper, said profile member including

bent end portions, means for reinforcing said back wall means including running out portions, and means provided at said



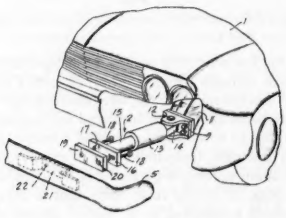
running out portions and said back wall means for guiding said bent end portions to prevent tilting of said profile member.

3,880,455

SHOCK ABSORBING VEHICLE BUMPER ASSEMBLY

Nils Christian Toemmeraas, Froeyslandsvei 28, 2830 Raufoss, Norway

Filed Mar. 12, 1973, Ser. No. 340,538
Claims priority, application Norway, Mar. 14, 1972, 807/72
Int. Cl. B60r *19/04*
U.S. Cl. 293—99 **7 Claims**



1. A shock absorbing assembly for attaching a channel shaped bumper to a vehicle in a manner leaving the entire outer face of the bumper free and clean from any visible connecting part, wherein the improvement comprises at least two substantially parallel shock absorbing units, first connecting means attaching one end of each unit to the vehicle in a manner permitting lateral pivotal movement of the unit relatively to the vehicle, and second connecting means attaching the opposite end of each unit to the bumper inside the channel thereof, said second connecting means including an elongated plate member attached to the shock absorbing unit, an elongated mounting yoke member for attachment to the inside of the bumper and an elongated elastomer member mounted between said plate member and said mounting yoke member, said plate member, elastomer and mounting yoke member being secured to each other and extending transversely to the axis of the shock absorbing unit.

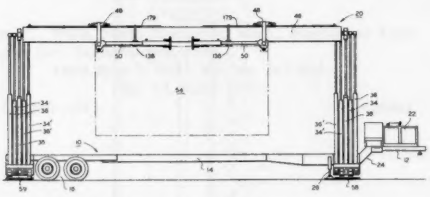
3,880,456

FITTING FOR LIFTING CARGO CONTAINERS

Garland D. DeRoshia, Newman Lake, Wash., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Mar. 19, 1973, Ser. No. 342,717
Int. Cl. B66c *1/66*
U.S. Cl. 294—81 SF **9 Claims**

1. In a load handling apparatus adapted for lifting and moving cargo containers with fixtures in the upper side corners, and including a pair of horizontally positioned, laterally extensible and retractable members for projecting outwardly above and on opposite sides of the containers, and an arm at the outer end of each of said members adapted for movement from a vertical position along the side of the container to a raised, generally horizontal position: a fitting connected to the outer end of each member and having a structure extending laterally from the respective member and arm, a pin fixed with respect to the respective member and arm and extending inwardly in a generally horizontal position from said structure in spaced relation to the respective member and disposed laterally in relation to the respective arm, a motor means for



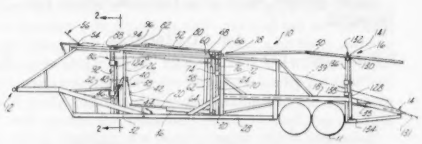
retracting and extending said members and simultaneously engaging said pins with and disengaging them from the container fixtures when said arms are in their horizontal position, and means spaced horizontally from said members supporting said arms for inward and outward lateral movement when said arms are in their horizontal position and are moved between said container engaging and disengaging positions.

3,880,457

TRAILER FOR TRANSPORTING VEHICLES

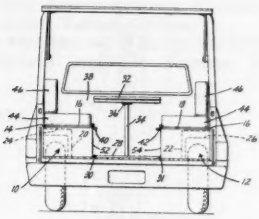
Paul Jones, Jr., 4347 Moon Light Dr., Holly, Mich. 48442

Filed May 24, 1973, Ser. No. 363,350
Int. Cl. B60p *3/08*
U.S. Cl. 296—1 A **8 Claims**



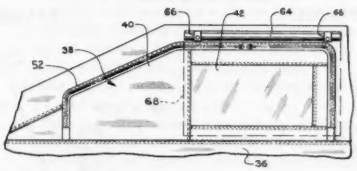
1. A trailer for transporting vehicles comprising:
a. a lower deck comprising first, second and third sections;
b. an upper deck spaced apart from the lower deck, the upper deck having at least one section which is vertically raisable and lowerable;
c. a cylinder mechanism for raising the section;
d. means for fixing the section in position, said means comprising:
1. an apertured frame post extending between the upper and lower deck,
2. a slide collar mounted on the post,
3. a strap connected at one end to the upper deck and to the collar at its other end, the strap being responsive to movement of the cylinder to thereby raise and lower the collar, and
4. means insertable into an aperture of the post immediately below the position of the collar;
e. means for supporting a load placed on the section;
f. at least one section of the upper deck being pivotally moveable between a horizontal and inclined position;
g. means for fixing the pivotally moveable section in the horizontal position; and
h. means for adjusting the relative height between the second and third sections of the lower deck, the means for adjusting the height comprising:
1. a pulley fixedly secured to a frame post of the trailer and extending between the upper and lower deck, and
2. a cable passing through the pulley, one end of the cable being attached to the second section and the other end of the cable being attached to the third section.

3,880,458
CAMPER MODULE
Gene F. Jackson, 5924 Arlene Ave., Fort Wayne, Ind. 46806
Filed Mar. 29, 1974, Ser. No. 456,306
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 G 8 Claims



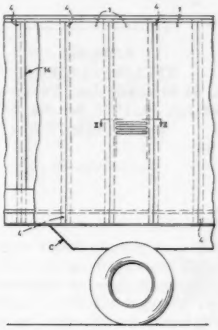
1. A portable camper module which is convertible into each of a plurality of different configurations comprising two rectangular box shaped benches disposed in spaced apart parallel relation when rested on a horizontal supporting surface, a flat deck element disposed substantially parallel to said supporting surface having opposite parallel edges hingedly connected, respectively, to the lower facing portions of said benches, said benches having height dimensions that will permit the folding thereof about said hinge connections toward each other into engagement with said deck element.

3,880,459
TENT ENCLOSURE
Robert A. Kelley, 32 N. Huron St., Toledo, Ohio 43604
Filed Feb. 22, 1973, Ser. No. 334,744
Int. Cl. B60p *3/34*
U.S. Cl. 296—27 6 Claims



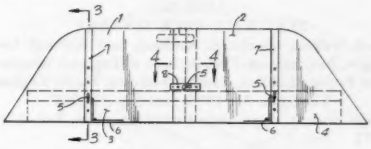
1. In a tent camper, a rigid housing base, a pair of platforms extending outwardly from two opposite ends of said base, a rigid roof supported a predetermined distance above said base, a flexible enclosure including end panels extending upwardly from the outer edges of said platforms, roof panels extending outwardly from said rigid roof to said end panels, and side panels extending from upper portions of the base to said rigid roof, said side panels also extending to said end panels and to said roof panels, said panels being made of a non-breathable plastic-coated material, at least one of said side panels having a screened opening therein, an inner weather flap of breathable, woven fabric having an edge affixed to said one side panel and an opposite edge removably affixed to said back of said side panel around said screened opening, said flap having a clear, flexible sheet mounted therein, and a privacy flap having an upper edge supported above the screened opening, said privacy flap also being of a breathable, woven fabric.

3,880,460
SELF-SUPPORTING COACH WORK OR CABIN
Johannes Hermanus Jacobus Pennock, Eindhoven, Netherlands, assignor to Van Doorne's Aanhangwagenfabriek NV, Eindhoven, Netherlands
Filed Jan. 3, 1973, Ser. No. 320,746
Claims priority, application Netherlands, Feb. 11, 1972, 7201805
Int. Cl. B62d *33/04*
U.S. Cl. 296—29 2 Claims



1. In a coachbuilt vehicle including a chassis with uprights and panels non-detachably and non-shiftably attached thereto, the improvement wherein:
- said uprights comprise rigid, non-deformable members extending vertically upwardly from said chassis, each of said uprights having an I-shaped cross-sectional configuration with opposite flanges joined by a web, each of said uprights having a vertical slot extending through one of said flanges into said web, and the web of each of said uprights having aligned apertures extending therethrough on opposite sides of said slot;
- each of said panels comprise members having opposite edges thereof bent along the entire length of the panel at right angles to the plane of the panel, thus forming inwardly turned panel flanges;
- the adjacent panel flanges of adjacent of said panels being inserted into the slot of one of said uprights; and
- each pair of said adjacent panel flanges inserted in one of said slots being permanently deformed in the same direction transverse to the respective web into said apertures therein to provide non-detachable panel locking means for preventing removal of said panels from said uprights.

3,880,461
WINDSHIELD HEAT REFLECTOR
George Paul Flanagan, 5223 Bonnie View Rd., Dallas, Tex. 75241
Filed July 2, 1973, Ser. No. 375,320
Int. Cl. B60j *3/02*
U.S. Cl. 296—95 C 1 Claim



1. A heat reflective device for the protection of a parked vehicle consisting of a composition sheet material faced on one surface with heat and light reflective material, said device shaped to approximate the outline of the windshield and to fit

inside and against the windshield of a parked motor vehicle so as to reflect the heat rays of the sun out of the vehicle and thus prevent the buildup of heat inside the vehicle, said device comprising sheets of laminate of a backing of composition sheet material faced on one side with aluminum foil, with the several sheets of the laminate slidably joined together in overlapping fashion, with means to fix adjacent sheets in a given position relative to each other, and with foldout legs fastened to the composition material for furnishing upright support to the device when resting on a cowl behind a windshield of a vehicle.

3,880,462

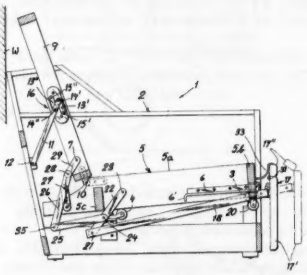
RECLINING CHAIR

Philip Mednick, 46 Riverdale Ave., Yonkers, N.Y. 10701

Filed Jan. 30, 1974, Ser. No. 437,882

Int. Cl. A47c *1/02*

U.S. Cl. 297—84 **10 Claims**



1. A reclining chair comprising:

a frame forming a generally horizontal guide track;

a seat on said frame movable along said guide track between a retracted position and an advanced position;

a back rest having a lower edge pivotally connected to the rear end of said seat; and

an articulated linkage connecting an intermediate portion of said back rest with two degrees of freedom to a point on said frame rearwardly of said back rest and above the level of said seat for allowing said back rest to swing between a nearly upright attitude in said retracted position and a sharply inclined attitude in said advanced position, said back rest having an upper edge descending substantially vertically upon passage from said nearly upright attitude to said sharply inclined attitude;

said linkage comprising a lever fulcrumed on said frame at said point, and a pair of arms shorter than said lever articulated to a free end thereof at spaced-apart locations, said arms being joined to said intermediate portion on opposite sides of said lever by respective pivots whose spacing is less than the sum of the effective lengths of said arms.

3,880,463

SEAT WITH BACK SUPPORT

Bernard William Shephard, Basildon, and Kenneth George Draper, Burnham-on-Crouch, both of England, assignors to Ipeco Europe Limited, Southend-on-Sea, Essex, England

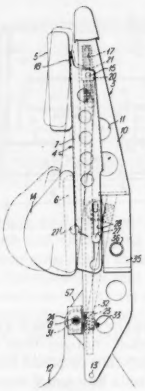
Filed Jan. 31, 1973, Ser. No. 328,385

Claims priority, application United Kingdom, Feb. 2, 1972, 4820/72

Int. Cl. A47c *1/031*

U.S. Cl. 297—284 **9 Claims**

1. A vehicle seat which has a seat portion and a seat back, the seat back including a seat back frame and a back rest, the back rest being borne on a back rest frame, the back rest including: supports respectively for the lumbar and shoulder regions of a person seated on the seat portion, the supports being both mounted on the back rest frame, the seat back frame having an elongate guide means, the back rest frame having a pivot, the pivot engaged in the elongate guide means, the pivot being movable in rotation about its axis and being movable in translation along the elongate guide means, separate adjustment means respectively determining the relative angular position of the frames about the axis of the pivot and the position of the pivot along the elongate guide, and independently operable controls respectively for the separate adjustment means being both accessible to a person while seated on the seat portion in an operational attitude.



3,880,464

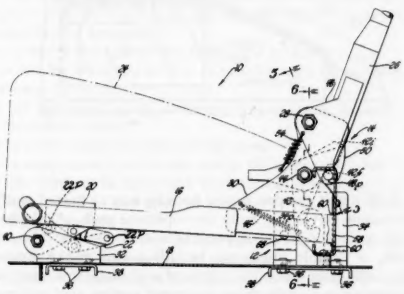
DOUBLE FOLDING SECOND SEAT

Randall T. Murphy, Troy; Omar D. Tame, Taylor, and Clifford L. Mortimer, Southfield, all of Mich., assignors to Lear Siegler, Detroit, Mich.

Filed Sept. 24, 1973, Ser. No. 400,295

Int. Cl. B60n *1/04*

U.S. Cl. 297—326 **13 Claims**



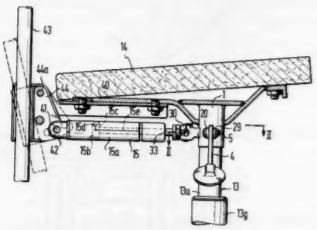
1. In a vehicle seat including a seat bottom frame member adapted to be mounted for pivotal movement relative to a vehicle floor and a seat back frame member connected with the seat bottom frame member and pivotal relative to the seat bottom frame member, the improvement comprising: a first latch means connected with said seat bottom frame member for latching said seat bottom frame member in its seat forming position, a second latch means connected with said seat back frame member for latching said seat back frame member in its seat forming position, and interlock means connected with said second latch means for preventing said second latch

means from latching until and unless said first latch means is latched.

3,880,465
SEAT OF ADJUSTABLE HEIGHT HAVING AN ADJUSTABLE BACK

Hans Scheben, Koblenz-Rubenach, Germany, assignor to Stabilus GmbH, Koblenz, Germany

Filed May 14, 1973, Ser. No. 360,088
Claims priority, application Germany, May 17, 1972, 2223886
Int. Cl. A47c 7/40
U.S. Cl. 297—345 10 Claims

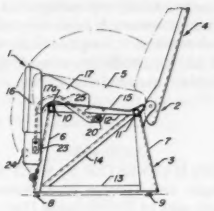


1. A body supporting device comprising, in combination:
a. a base;
b. a seat assembly;
c. a first column of variable length including
   1. two longitudinally terminal portions respectively secured to said base and said seat assembly,
   2. yieldably resilient first biasing means biasing said terminal portions to move relative to each other in a predetermined longitudinal direction,
   3. first control means normally limiting the biasing action of said biasing means, and
   4. first releasing means operatively connected to said control means and movable for inactivating said control means and thereby releasing said biasing means;
d. a back connected to said base for pivoting movement relative to said seat assembly;
e. a second column of variable length including
   1. two longitudinally terminal portions respectively secured to said base and to said back,
   2. yieldably resilient second biasing means biasing said terminal portions of said second column to move relative to each other in a predetermined longitudinal direction and for thereby pivoting said back,
   3. second control means normally limiting the biasing action of said second biasing means, and
   4. second releasing means operatively connected to said second control means and movable for inactivating said second control means and thereby releasing said second biasing means;
f. a single operating member; and
g. mounting means movably mounting said operating member on said base for alternative engagement with said first and second releasing means and for thereby moving the engaged releasing means to inactivate the associated control means.

3,880,466
FORWARD-FOLDING ARM REST FOR VEHICULAR SEATING

Edward J. Brennan, Litchfield, Conn., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed June 14, 1973, Ser. No. 370,200
Int. Cl. A47c 7/54; B60n 1/06
U.S. Cl. 297—417 5 Claims

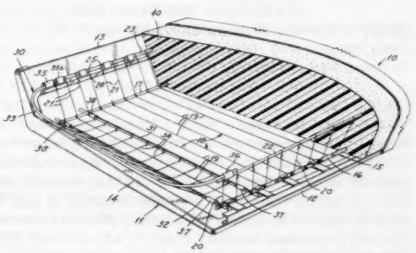


1. In a passenger vehicle seating unit making use of an integrated support frame and having generally horizontal arm rest means and adapted to be positioned between adjacent seats in a multiple seat unit, the improved construction permitting the folding of such arm rest means forwardly and out of the way which comprises, having a generally vertical supporting section extend downwardly from a rearward portion of the arm rest means to a single pivotal connection with a pin means connecting to the seat support framing below the seat level, providing a vertically slotted opening in said supporting section at the pivot pin connection to permit a slight raising and lowering thereof, further providing a separate notch and pin engagement between the lower portion of said supporting section and said seat support framing, whereby there is an engagement therebetween except when said supporting section together with said arm means is lifted out of the engagement and there is a forward pivoting of the combination through about 90° to hang in front of such seat support framing in such position that the back portion of said arm rest means is located substantially level with the top of adjacent seats.

3,880,467
SEAT CONSTRUCTION

Henry J. Tischler, Bloomfield Hills, Mich., assignor to Gulf & Western Metals Forming Company, Southfield, Mich.

Continuation-in-part of Ser. No. 181,041, Sept. 16, 1971, Pat. No. 3,727,980, which is a continuation-in-part of Ser. No. 25,832, April 6, 1970, Pat. No. 3,639,002. This application Mar. 21, 1973, Ser. No. 343,227
The portion of the term of this patent subsequent to Feb. 1, 1989 has been disclaimed
Int. Cl. A47c 7/02, 23/00; B60n 1/06
U.S. Cl. 297—452 11 Claims



1. In a seat construction, a spring assembly comprising

a pair of longitudinally extending wires,

a plurality of transversely extending spaced spring wires,

portions of said transversely extending spaced spring wires being wound around said longitudinally extending wires to define an intermediate portion extending between the spaced longitudinally extending wires and connected thereto and free ends extending beyond the longitudinally extending wires at an acute angle to the intermediate portion,

an additional longitudinally extending wire connecting the free ends of said transversely extending spring wires along each said first-mentioned longitudinally extending wire,

at least one of said longitudinally extending wires comprising an elastomeric material and having a solid cross section.

3,880,468

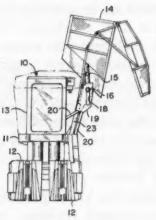
COTTON HARVESTER BASKET LOCK

Richard R. Steingas, and Thomas W. Lawson, both of Memphis, Tenn., assignors to International Harvester Company, Chicago, Ill.

Filed July 8, 1974, Ser. No. 486,278

Int. Cl. B60p *1/34*

U.S. Cl. 298—11 **2 Claims**



1. In a cotton harvester of the type having a frame, a crop-receiving basket, means for mounting said basket on said frame, said mounting means being operable to raise and lower said basket between a lowered position for receiving crops and a raised and tilted position for dumping said basket, said basket having a roller, said frame having an arcuate surface portion engaged by said roller and having a radial stop surface therefor to limit the travel of said basket toward the dumping position, hydraulic means for operating said mounting means, and selectively operable means for retaining said basket in said dumping position, the improvement wherein said retaining means comprises a bar slidably mounted on said harvester frame, said bar being disposed for longitudinal movement through said arcuate surface portion between a first inoperative position and a second position trapping said roller against said radial stop surface.

3,880,469

STABILIZER FOR DUMP BOX

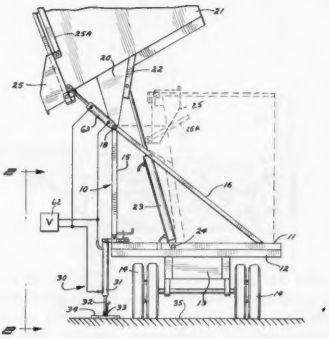
Harley A. Harrom, Benson, Minn., assignor to TCI, Inc., Benson, Minn.

Filed May 22, 1973, Ser. No. 362,749

Int. Cl. B60p *1/04*

U.S. Cl. 298—17 SG **7 Claims**

1. A stabilizer support for a tilting box mounted onto a frame for dumping movement about a tilting axis, including a fluid pressure actuated cylinder assembly, mounting means to pivotally mount a first end of said cylinder assembly to said frame including first means pivotally mounted to said frame about a first axis extending substantially parallel to said tilting axis and positioned inwardly from an adjacent side edge of said frame, which adjacent side edge extends in a direction generally along said first axis, said first means including an elongated support section, second means connected to said cylinder assembly and pivotally mounted to said elongated support section about a second axis at substantially right angles to said first axis, said second means being positioned on the elongated support section to offset said cylinder assembly laterally outward from said first axis so that said cylinder assembly is outwardly from said adjacent side edge of said frame when the second axis is substantially horizontal, means to releasably lock said elongated support section in a first position wherein said second axis extends generally horizontally and the cylinder assembly extends downwardly under gravity about said second axis and the first means is restrained



from movement about said first axis, means on a second end of said cylinder assembly adapted to engage the ground when said cylinder assembly is in said first position and is actuated, means to actuate said cylinder assembly under fluid pressure, and means to release said releasable lock means to permit said cylinder assembly to be rotated about said first axis to position wherein said second axis and said elongated support section extend generally uprightly, and said cylinder assembly being rotatable about said second axis to a storage position generally parallel to the first axis and inwardly toward the center of the frame from said adjacent side edge.

3,880,470

METHOD FOR WELL BORE MINING IN AN UNCONSOLIDATED STRATUM

J. Gilbert Davis, II, Star City, W. Va., assignor to Continental Oil Company, Ponca City, Okla.

Filed Nov. 28, 1973, Ser. No. 419,555

Int. Cl. E21c *45/00*

U.S. Cl. 299—17 **3 Claims**

1. A method of mining in an unconsolidated structure comprising:

a. forming a bore hole in the ground to at least the bottom of the structure to be mined;

b. casing said bore hole to a point at not more than five feet about the bottom of said bore hole;

c. forming a sump between the bottom of said bore hole and the bottom of said casing in consolidated material;

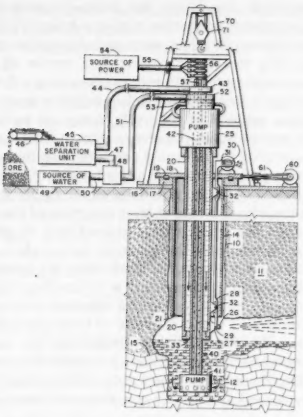
d. positioning a pump near the bottom of said formed sump;

e. positioning a jet above said pump;

f. forcing fluids out of said jet against said formation while moving said jet vertically and axially in one direction about the axis of said bore hole to form an elongated slot in said formation;

g. pumping out dislodged formation material after subsi-

dence of said formation continuing to rotate said jetted fluid into said subsided formation; and



h. pumping out said additionally dislodged formation material.

3,880,471

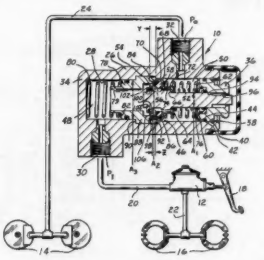
FLUID PRESSURE METERING DEVICE

Richard L. Lewis, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Dec. 14, 1973, Ser. No. 425,003

Int. Cl. B60t *11/34*

U.S. Cl. 303—6 C **10 Claims**



1. In a fluid pressure control device for the hydraulic brake system of an automotive vehicle having disc brakes at one set of wheels and drum brakes at another set of wheels comprising:

a housing having an inlet adapted to be connected to a hydraulic pressure source, an outlet adapted to be connected to the disc brakes, and a bore communicating the inlet with the outlet;

valve means in the bore dividing the bore into an inlet chamber and an outlet chamber, said inlet and outlet chambers communicating respectively, with the inlet and outlet;

said valve means being normally open to establish a first flow path to allow substantially free flow of fluid between the inlet and outlet chambers until a first predetermined pressure level in the inlet chamber is attained, said valve means including first means responsive to said first pressure level to terminate flow of fluid between the inlet and outlet chambers to permit the fluid pressure level in the inlet chamber to increase while the fluid pressure level in the outlet chamber is held at its first predetermined level, said valve means further including second means cooperating with said first means when a second predetermined pressure level in the inlet chamber is reached to displace said valve means into the outlet chamber by the pressure rise at the inlet chamber causing a pressure increase in the outlet chamber, said valve means further including third means cooperating with said first and second means when a third predetermined pressure level is attained to establish a second flow path which alternately opens and closes so that the fluid is metered from the inlet to the outlet until the fluid pressure levels at the inlet and outlet equalize whereupon said first, second and third means permits the valve means to open wide to allow substantially uninhibited flow through the second path from the inlet to the outlet chamber.

3,880,472

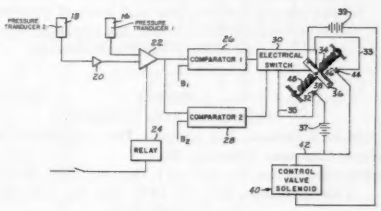
HYDRAULIC BRAKING SYSTEM FOR A TRAILER

Richard L. Lewis; Robert K. Wilson, and George B. Hickner, all of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed Nov. 19, 1973, Ser. No. 417,458

Int. Cl. B60t *13/16*

U.S. Cl. 303—7 **14 Claims**



1. In a tow vehicle-trailer braking system having a valve means for regulating the actuation of the wheel brakes in the trailer in response to an input signal derived by comparing the braking force supplied the wheel brake of the tow vehicle with the braking force supplied the wheel brakes in the trailer, pumping means located in the trailer for maintaining the available braking force therein above a predetermined level, said pumping means comprising:

a housing having a first bore therein, said first bore having an entrance port and an exit port, said entrance port being connected to a reservoir filled with a fluid, said exit port being connected to a storage container;

piston means located in the first bore;

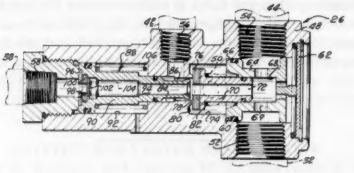
cam means connected to a wheel on the trailer for reciprocating the piston means in said bore upon rotation of said wheel, said piston means upon reciprocating pressurizing the fluid received in said bore through the entrance port before being communicated through the exit port into the storage container to establish said available braking force; and

control means responsive to the pressurized fluid in said storage container for disengaging the piston means and the cam means.

3,880,473
EMERGENCY CONTROL VALVE

John A. Urban, Livonia; Gary L. Hopkins, Southfield, and John Keith Armstrong, Livonia, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 192,438, Oct. 26, 1971, abandoned. This application Feb. 12, 1973, Ser. No. 354,632
Int. Cl. B60t *13/28, 15/12*
U.S. Cl. 303—9 **4 Claims**



1. A brake control system for controlling the application of brakes of a wheeled vehicle, said system comprising:

A. a brake actuator for applying the brakes of a wheel and including mechanical means for applying the brakes, a hold-off chamber and a service chamber;

B. a source of fluid pressure;

C. control means

1. operative to communicate said source of fluid pressure with said hold-off chamber when the pressure from said source is greater than the pressure in said hold-off chamber,

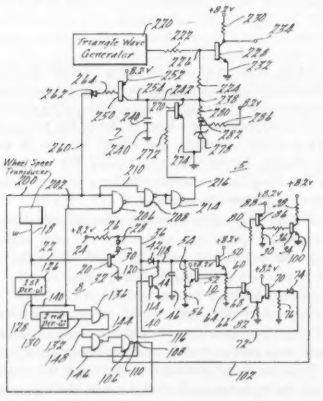
2. operative to communicate said source of fluid pressure with said service chamber when the pressure from said source is above a first predetermined level, and

3. operative to communicate said hold-off chamber with said service chamber when the pressure from said source is below a said predetermined level.

3,880,474
SKID CONTROL SYSTEM

Ronald S. Scharlack, San Antonio, Tex., assignor to Kelsey-Hayes Company, Romulus, Mich.

Continuation of Ser. No. 875,411, Oct. 10, 1969, abandoned. This application Oct. 18, 1971, Ser. No. 190,336
Int. Cl. B60t *8/10*
U.S. Cl. 303—21 P **20 Claims**



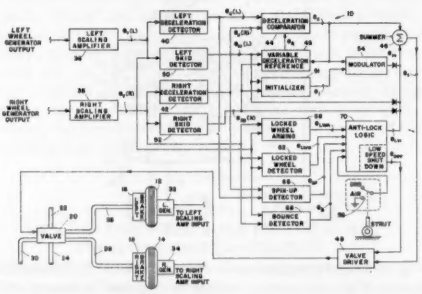
1. A skid control system for controlling the operation of a control valve assembly connected in controlling relation with the hydraulic brake system of a wheeled vehicle, the valve assembly controlling the application of hydraulic force to the wheel brake to provide a run-down and spin-up portion of a brake cycle including a release, a reapply and a hold interval, the improvement comprising the control system having at least three modes of operation within a brake cycle and including an output coil, said system including pulse generating means including means for generating a stream of pulses in said intervals, said generating means generating a first pulsing signal formed of a first series of pulses within at least a portion of said release interval of the cycle, a second pulsing signal formed of a second series of pulses within at least a portion of the reapply interval for returning pressure from the wheel, and a third pulsing signal formed of a third series of pulses within at least a portion of the hold interval of the cycle, for holding pressure at the wheel during at least a portion of the acceleration portion of the wheel cycle, at least two of said signals varying in part, one from the other, in duty cycle.

20. A skid control system for controlling the operation of a control valve assembly connected in controlling relationship with the hydraulic brake system of a wheeled vehicle, the first assembly controlling the application of hydraulic force to the wheel brake, the improvement comprising the method of operating the control system in at least three modes of operation including the steps of generating a first pulsing signal of a first increasing duty cycle characteristic for dumping pressure from the wheel, generating a second pulsing signal of decreasing duty cycle characteristic for returning the brake pressure to the wheel, and a third pulsing signal of a second constant duty cycle for holding the pressure during the acceleration portion of the wheel cycle.

3,880,475
ANTI-SKID SYSTEM

Harold R. Booher, Boardman, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 239,025, March 29, 1972, abandoned. This application Dec. 7, 1973, Ser. No. 422,843
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 BE **8 Claims**



1. An anti-skid control system for an aircraft having two main wheels, hydraulic braking means common with each main wheel, electrically controlled valve means regulating hydraulic pressure to the brake means, and wheel speed sensor means associated with each main wheel and generating an electrical signal proportional to wheel rotational velocity, comprising:

first circuit means connected to the wheel speed sensor means for producing a first electrical signal when the rate of deceleration of either wheel exceeds a particular level;

first and second skid detector circuits, one connected to each of the wheel speed sensor means and each producing a fixed level output signal constituting a second electrical signal;

an initializer circuit connected to the skid detector circuits, receiving the output signals therefrom and creating an initialization signal;

a modulator circuit connected to and receiving the output signals from the initializer circuit and creating an output signal, said modulator output signal having an amplitude directly related to the frequency of occurrence of said second electrical signal, and said amplitude being immediately increased upon the creation of said initialization signal;

second circuit means connected to the wheel speed sensor means for producing a second electrical signal whenever either of the associated wheel velocities drops below a first level while the other wheel velocity remains above a second level; and

valve driving circuit means interposed between the two said circuit means, modulator circuit and the electrically controlled valve means, and receiving and responding to the first and second electrical signals and the modulator output signals to regulate the hydraulic pressure of the brake means.

3,880,476
ELECTROMAGNETIC VALVE

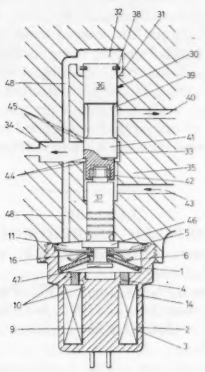
Juan Belart, Walldorf; Werner Fink; Dieter Kircher, both of Frankfurt, and Hubertus Von Grunberg, Niederhochstadt, all of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Nov. 28, 1973, Ser. No. 419,846

Claims priority, application Germany, Dec. 20, 1972, 2262247

Int. Cl. B60t *8/02*

U.S. Cl. 303—21 F **14 Claims**



1. An electromagnetic valve for use in an antiskid brake system comprising:

a magnet housing having a first longitudinal axis;

a magnet winding disposed in said housing coaxial of said axis;

a magnetic return path disposed in said magnet housing magnetically coupled to said winding;

a sleeve of non-magnetic material disposed in said return path coaxial of said first axis;

a first chamber disposed in said magnet housing adjacent said sleeve and said return path;

a valve body disposed coaxial of said first axis, at least a portion of said valve body projecting into said first chamber;

a plurality of armature plates disposed in said first chamber, said armature plates having a central opening coaxial of said axis, the outer edges of said armature plates abutting said return path and being slightly inclined away from said return path, and the inner edges of said armature plates engaging said portion of said valve body projecting into said first chamber to move said valve body when said winding is energized and said armature plates adjacent said inner edges are attracted toward said return path;

a spring disposed in said first chamber in an engaged relationship with said valve body and said armature plates to bias said valve body and said armature plates in a rest position;

said valve body controlling the flow of a brake pressure medium through said valve between at least a brake pressure medium inlet and a brake pressure medium outlet when said winding is energized and said armature plates are attracted toward said return path;

said spring including

a diaphragm spring having openings therethrough and a central aperture coaxial of said first axis, the inner edge of said diaphragm spring adjacent said central aperture engaging a groove provided in said portion of said valve body projecting into said first chamber and the outer edge of said diaphragm spring being firmly connected to said magnet housing surrounding said first chamber.

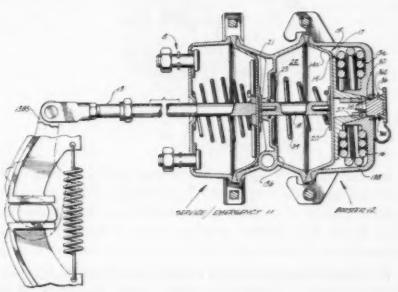
3,880,477
MOTOR VEHICLE SECURITY SYSTEM AND SECURITY METHOD

Billy E. Stevenson, Huntington Beach, and Thomas R. Rumsey, Inglewood, both of Calif., assignors to Royal Industries, Inc., Pasadena, Calif.

Division of Ser. No. 181,673, Sept. 20, 1971, Pat. No. 3,770,324. This application July 19, 1973, Ser. No. 380,851

Int. Cl. B60t *17/16*

U.S. Cl. 303—89 **8 Claims**



1. A motor vehicle security system for a motor vehicle comprising

a motor vehicle including a tractor and at least one trailer coupled thereto, each having a plurality of wheels, a source of pressurized air, separate braking assemblies for each of the plurality of wheels for the tractor and the trailer each adapted to be activated to a braking position, pneumatic control means coupled to the source of pressurized air for controllably activating the braking assemblies, the braking assemblies for the tractor and trailer including mechanically powered alternate brake setting means coupled to the source of pressurized air and maintained in a de-actuated brake setting condition in response to the application of pressurized air thereto and automatically activated to a brake setting position in response to the loss of pressurized air below a predetermined level, and a lockable valve means coupled in series with the source of pressurized air and the mechanical brake setting means for controlling the application of pressurized air thereto and thereby the braking condition of each of the braking assemblies,

the mechanically powered brake setting means being a spring powered brake setting means constructed and defined to allow manual resetting of the spring powered brake setting means at said brake means, said spring powered brake setting means including means for pre-

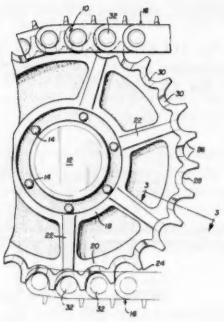
venting the manual resetting of the spring powered brake setting means at said brake means to prevent unauthorized operation of the braking assemblies when the lockable valve means is in the locked brake setting position, the lockable valve means being manually operable to a locked condition for producing a brake setting operation and thereby render said control system inoperative and manually operated to an unlocked condition for allowing the controllable and automatic setting of the brakes without interference with the normal operation of the control system therefor.

3,880,478

CRAWLER CHAIN SPROCKET WITH RELIEF OPENINGS

John M. Baylor, Bettendorf, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Jan. 7, 1974, Ser. No. 431,582
Int. Cl. B62d *55/00*
U.S. Cl. 305—13 **11 Claims**



1. A combination crawler track chain assembly and crawler sprocket for a crawler tractor; said sprocket driveably mounted on a driving axle of a crawler tractor, said chain track including a plurality of generally parallel bushings having cylindrical surfaces which engage said sprocket for driving said track and said crawler, said sprocket comprising in combination:

a central hub connected to a coaxial circular rim,

said rim including a plurality of radially directed, equally spaced peripheral teeth extending substantially across the entire rim width to engage and drive said bushings,

said teeth having concave, radially sloping sides extending substantially across the entire width of the rim and defining an arcuatee root face valley between each two adjacent teeth,

said root faces having a width generally the same as but slightly less than the width of said track bushings, said cylindrical bushing surfaces snugly fitting into said root face valleys to be driven by said sprocket,

a relieved notch in only one side of and extending across less than half the width of each said root face to allow said bushings to expel dirt and debris from said sprocket root face region, the other side of said root face extending substantially to the opposed extremity of said rim, and

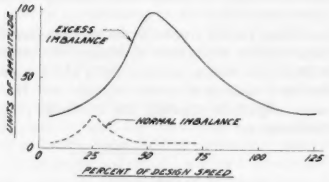
said plurality of notches arranged in said root faces on alternate sides thereof, so that the wear pattern created on the crawler track bushings by repeated engagement with said root faces extends substantially across the width of said bushings.

3,880,479

EMERGENCY BEARINGS FOR ROTATING SHAFT SYSTEMS

Angelo De Feo, Totowa Boro; Mark R. Kulina, Franklin Lakes, and Earl B. Norwood, Westwood, all of N.J., assignors to Curtiss-Wright Corporation, Wood Ridge, N.J.

Filed Sept. 4, 1973, Ser. No. 394,051
Int. Cl. C22c *5/00*; **F16c** *17/02*, *17/20*
U.S. Cl. 308—36 **3 Claims**



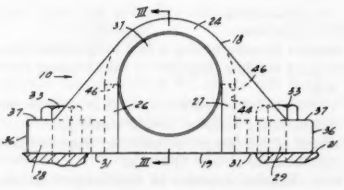
1. In a rotary shaft system having at least two service bearings, vibration damping means in combination with the shaft system comprising a rotating journal member borne by a portion of the shaft system, and an emergency bearing circumferentially surrounding the journal member, the emergency bearing and its journal member being positioned in the shaft system at an axial location where bending occurs during conditions of extraordinary vibration, the diameters of the journal member and its emergency bearing being selected to provide radial spacing therebetween sufficient to allow normal vibration of the shaft system during acceleration and deceleration without contact between the journal member and the emergency bearing, the radial spacing being such as to provide such contact during conditions of extraordinary vibration and serving to damp such vibration, the journal engaging surface of the emergency bearing being provided with a silver alloy bearing material capable of operating for a limited period against the surface of the journal member without lubrication and without seizing.

3,880,480

NONMETALLIC BEARING HOUSING

Lawrence G. Anderson, Greenhurst, N.Y., assignor to TRW Inc., Cleveland, Ohio

Division of Ser. No. 159,724, July 6, 1971, Pat. No. 3,873,167.
This application Jan. 22, 1973, Ser. No. 325,615
Int. Cl. F16c *13/00*
U.S. Cl. 308—74 **3 Claims**



1. A bearing housing comprising: a two part assembly, each of said parts being composed of a nonmetallic material, each of said parts being annular with a central aperture defined by an inner diameter axially extending peripheral wall, each of said walls having a parti-spherical surface with the inner diameter at one axial end of the wall larger than the inner diameter at the other axial end, said one axial end being at a first radial face of the part, the first radial faces of the parts bonded together in face-to-face contact, at least one of the first radial faces having a radially extending lubrication groove therein

terminating radially inwardly of the outer diameter, the peripheral walls having aligned axially extending lubrication grooves therein extending axially from the said one ends and terminating in spaced relation to another axial end of each of the parts, the radially extending groove intersecting at least one of the axial grooves, one of the parts having an aperture therethrough aligned with and communicating with the radial groove, the aperture fitted with a lubrication nipple and a plurality of apertures through the said parts for attaching the said housing to a common body.

3,880,481

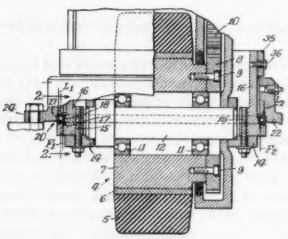
BEARING ASSEMBLY

Richard F. George, Muskegon, Mich., assignor to Keene Corporation, New York, N.Y.

Filed Mar. 8, 1974, Ser. No. 449,515

Int. Cl. F16c *33/00*

U.S. Cl. 308—191 **8 Claims**



1. Load bearing apparatus comprising an outer stationary component have a first annular shouldered recess providing a first race seat having a first base surface and a first inner cylindrical surface extending at right angle with respect to said first base surface, an inner rotatable component having a second annular shouldered recess providing a second base seat in axially spaced parallel relation with respect to said first base seat and a second outer cylindrical surface extending at right angles with respect to said second base seat parallel with but in a direction opposite that of said first cylindrical surface, an angular contact radial and thrust bearing assembly having outer and inner ball bearing races mounted in said race seats of said outer housing component and said inner rotatable component, in radially spaced apart relation said ball bearing races having between them recesses the surfaces of which provide bearing engaging surfaces in opposed facing relation with respect to each other, a plurality of load bearing balls disposed between the ball engaging surfaces of said races with small diametral clearance with respect to the ball engaging surfaces of the bearing races, spacer means between adjacent load bearing balls to dispose said load bearing balls in spaced apart relation circumferentially between said races, said ball bearing races having cylindrical surfaces having clearance fits with respect to the cylindrical surfaces of said outer stationary component and said inner rotatable component, respectively, to provide for relative radial movement of said outer and inner ball bearing races, and said load engaging surfaces of said races being of configurations to provide variable contact angles with said load bearing balls in a range of from about 30° to almost about 90° by elastic expansion and/or contraction of said races upon axial and radial movement of said races with respect to each other upon application of variable thrust loads to said outer stationary member, whereby the thrust load carrying capacity of said ball bearing assembly automatically increases or decreases, respectively, upon increase or decrease, respectively, of the thrust load applied to said outer stationary component.

3,880,482

Patent Not Issued For This Number

3,880,483

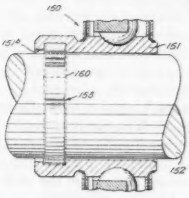
LOCKING DEVICE

Alan H. Snyder, Jr., Dallas, Tex., assignor to Roberts Industries, Inc., Salina, Kans.

Filed Apr. 28, 1972, Ser. No. 248,573

Int. Cl. F16c *33/30*

U.S. Cl. 308—236 **4 Claims**



1. A bearing locking system for locking an inner race of a bearing on a shaft comprising: means providing an internal annular recess within said inner race defined by spaced eccentric circumferential locking surfaces within said inner race providing a recess varying in radial depth from a minimum along spaced first circumferential portions of said recess to a maximum along spaced second circumferential portions of said recess, and locking means comprising an arcuate split spring locking part extending within said recess around a portion of said shaft biased into frictional engagement with said shaft and being movable by rotation of said shaft to a position between said shaft and said race for interlocking said shaft and said race, said locking part having locking wedge lobes along opposite end portions thereof, said locking part being positioned within said inner race around said shaft at a location at which said locking wedge lobes are each in one of said second portions of said recess of maximum depth, said wedge lobes being greater in radial dimension than the depth of said minimum recess portions whereby rotation of said shaft in either direction moves one of said wedge lobes into a wedging relationship between one of said locking surfaces of said bearing inner race and said shaft.

3,880,484

JEWELRY BOX

Marion P. Sicina, Florida, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Dec. 27, 1973, Ser. No. 428,686

Int. Cl. A47b *17/02*; **A47f** *5/10*

U.S. Cl. 312—202 **3 Claims**

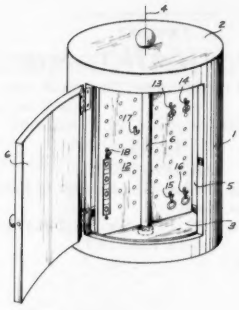
1. A jewelry box, comprising

a substantially tubular housing having a substantially cylin-

drical wall, a closed top and a closed bottom and adapted to stand on the bottom with its axis substantially vertical;

a coaxially extending shaft in the housing rotatably mounted in the top and the bottom of the housing;

a plurality of substantially rectangular plate-like members each having a plurality of hooks thereon for removably supporting jewelry; and



fastening means for removably affixing the plate-like members to the shaft in the housing for rotation therewith in a manner whereby the members extend radially from the shaft, said fastening means comprising a plurality of spaced recesses formed in the shaft and hooks extending from the plate-like members and removably accommodated in the recesses.

3,880,485

COOLER HAVING APPARATUS FOR SELECTIVELY STORING OR DEPLOYING TRAYS

Kerry D. Schmelzer, 1440 20th, West Des Moines, Iowa 50265

Filed Mar. 25, 1974, Ser. No. 454,086

Int. Cl. A47b *77/10*

U.S. Cl. 312—282 **8 Claims**

1. In an ice chest having an insulated container with a bottom, substantially planar sides, and an insulated lid for the container, and means for connecting the lid to the container for closing the container, the improvement comprising:

a plurality of trays having means to permit stacking of said trays relative to each other;

means for releasably holding said stacked trays on the lid of the container;

means for mounting said trays perpendicularly to the sides of said container, said mounting means comprising:

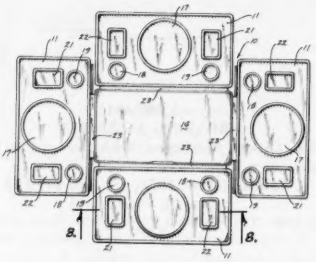
groove means laterally disposed along an outer surface of top edges of the substantially planar sides of said container and opening in a direction laterally outwardly with respect to the container;

protuberance means disposed on one edge of each of said trays for being selectively receivable in said groove means, said protuberance means being complimentary in shape with the groove means and being at least substantially as long in longitudinal length as the groove means, to provide lateral support thereof, said protuberance means further lying generally in a horizontal plane when said trays are in a horizontally deployed position;

brace means for engaging a portion of the sides of said container below the groove means and engaging a portion of each of said trays remote from said one edge of said trays;

a first opening in the bottom of each of said trays adjacent said one edge;

a projection means on said brace means for being selectively slideably received into and out from said first opening;



a second opening on the bottom of each of said trays remote from said first opening; and

a second projection means on said brace means for being selectively slideably received into and out from said second opening.

3,880,486

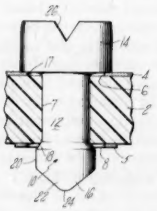
APPARATUS AND SYSTEM FOR INTERCONNECTING CIRCUITS AND ELECTRONIC COMPONENTS

Emik A. Avakian, Crestwood, N.Y., assignor to EPIS Corporation, Glastonbury, Conn.

Filed Mar. 5, 1973, Ser. No. 337,838

Int. Cl. H05k *7/12*

U.S. Cl. 339—17 M **21 Claims**



1. A connector element for making an electrical connection between circuits on circuit boards, said element being made of a resilient, conducting, elastomeric material and including a shank adapted to be positioned in a hole in a circuit board, said shank having a head at each end, each head being larger in diameter than the shank and being formed to provide resilient retention of said element within the hole whereby upon

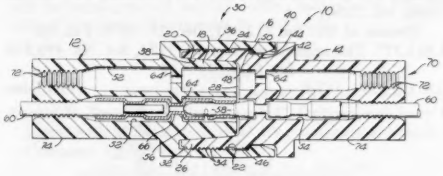
or after insertion each head will overlie and be in contact with the opposite surfaces of the board with one head extending over and in contact with a circuit on the board.

3,880,487

LOW COST SEALED CONNECTOR

David S. Goodman, Orange; Gerald J. Selvin, Huntington Beach; Jack Langenbach, Newport Beach; Willys T. Lemm, Costa Mesa, and Wilfred L. Mintz, Granada Hills, all of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed July 20, 1973, Ser. No. 381,267
Int. Cl. H01r *13/52*
U.S. Cl. 339—60 R 11 Claims



1. An electrical connector comprising:

mating plug and receptacle connector members each comprising a one-piece unitary elastic pliant body;

said receptacle connector member embodying a resiliently radially-expandable forwardly-extending sleeve portion and a central forwardly-extending supporting projection spaced from said sleeve portion to define a generally annular recess therebetween, said sleeve portion having a generally cylindrical inner surface surrounding said projection;

said plug connector member embodying a forwardly-extending annular section slidably insertable into said annular recess, said projection providing a relatively rigid support for said annular section;

said annular section providing a central cavity slidably receiving said projection and having a generally cylindrical outer surface;

one of said cylindrical surfaces being smoothly continuous and substantially free of undulations throughout its length;

a plurality of longitudinally-spaced annular ribs integral with the other of said cylindrical surfaces, said ribs being adapted to be compressively deformed in a sealing interference fit with said smoothly continuous cylindrical surface to form a first seal having a plurality of sealing contacts over a length of said receptacle connector member defined by said longitudinally-spaced ribs;

said annular section having an inner surface adapted to mate in sealing engagement with a cooperating outer surface of said supporting projection to form a second seal underlying said first seal;

longitudinally extending aligned contact passages in said plug and receptacle connector members, said receptacle connector member contact passage extending through said projection and said plug connector member contact passage opening into said cavity;

a plurality of annular integral ribs on the wall of each of said passages adjacent to the rear thereof dimensioned to have an interference fit with an insulated wire terminating in a contact in the forward portion of said passage; and

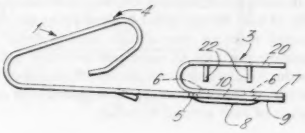
means in each said passage for removably retaining a contact therein.

3,880,488

ELECTRICAL CONNECTOR TO CONNECT TO FLAT FLEXIBLE CABLE

John Covell Collier, Farnworth, and David William Rickards, Stanmore, both of England, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 20, 1973, Ser. No. 417,677
Claims priority, application United Kingdom, Nov. 29, 1972, 55028/72
Int. Cl. H01r *11/20*
U.S. Cl. 339—97 C 5 Claims



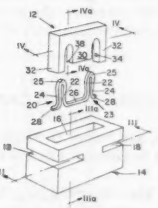
1. An electrical contact made from a sheet metal blank comprising a portion for connection to a flat conductor of a flat, flexible cable, the connection portion including a base of double thickness, a first layer of the base having a through aperture in alignment with an embossment formed in the second layer of the base, the embossment presenting a concave surface towards the aperture and a platform spaced from but overlying the first layer, the platform having a lance in alignment with the aperture, so that on crimping the connection portion to a flat, flexible cable operatively positioned between the platform and the base, the lance pierces the cable and passes through the aperture to engage the concave surface of the embossment which deflexes the lance laterally and inhibits withdrawal of the lance through the aperture.

3,880,489

ELECTRICAL CONNECTOR

William C. Dauser, Jr., North Muskegon, Mich., assignor to Lloyd A. Heneveld, Grand Rapids, Mich.

Filed Oct. 4, 1972, Ser. No. 294,934
Int. Cl. H01r *9/08*
U.S. Cl. 339—98 21 Claims



1. An electrical connector assembly adapted to be electrically conductively connected to a conductor comprising:

conductor-engaging means including at least two portions having spaced facing surfaces forming a conductor-receiving channel between which a conductor is to be electrically connected, and flexible means for holding said portions in spaced position but permitting relative movement of said portions toward and away from each other;

a first member receiving and surrounding said conductor-engaging portions on at least two sides thereof opposite said facing surfaces;

a second member having receiving means receiving said first member and said portions;

conductor-positioning means in said second member for guiding a conductor into position to be received between

said facing surfaces of said conductor-engaging portion when said first member is inserted in said receiving means of said second member; said first member being constructured of a resilient material and said second member being constructed of a comparatively rigid material with its receiving means being of a size and shape to receive said resilient first member so as to provide a press fit engagement at least along said pressure portions whereby when said first member is inserted and press-fitted within the receiving means of said second member only said first member of the said first and second members is deformed at its sides located along said two sides whereby the deformity of said first member backed up by the rigidity of said second member provides a biasing force against said pressure portions to urge said pressure portions of said conductor-engaging means into engagement with a conductor as said first member is inserted in said receiving means of said second member.

3,880,490

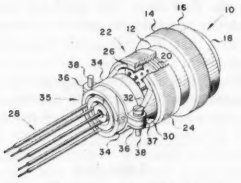
MEANS AND METHOD FOR PROTECTING AND SPACING CLAMPED INSULATED WIRES

Edward A. Belmont, Burbank, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Oct. 1, 1973, Ser. No. 402,184

Int. Cl. H01r *13/58*

U.S. Cl. 339—103 B **18 Claims**



1. The combination with a plurality of sets of circularly arranged conductors, of a circular array of concentrically oriented flexible bushings having substantially constant cross-sections, mounted in spaced relation about said conductors and grouping said sets in spaced relation to each other, and a clamp mounted the exteriorly disposed one of said bushings for maintaing the relative positions of said conductors.

3,880,491

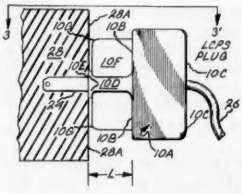
MALE PLUG ASSEMBLY INCORPORATING POWER SUPPLY

Armand P. Ferro, and Nancy D. Fitzroy, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 30, 1974, Ser. No. 474,669

Int. Cl. H01r *13/00*

U.S. Cl. 339—112 R **8 Claims**



8. In combination: at least one heat-producing electrical circuit element, comprising a resistor, semconductor device, capacitor, semiconductor diode, transistor, or ferrite core member; at least two generally parallel spaced-apart elongated blades electrically connected with said at least one circuit element, said elongated blades being adapted for being received in a female receptacle mounted in the surface of a wall, said female receptacle being adapted for establishing an input voltage between said elongated blades and energizing at least one circuit element; a body of dielectric material within which said circuit element is enclosed, said blades protruding from the surface of said body; and, means on said body for separating said surface of said body and said body from said wall when said blades are received in said female receptacle so that convection air currents may cool substantially the entire body.

3,880,492

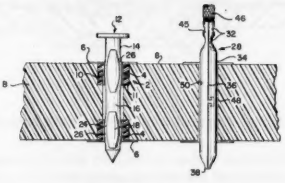
TIGHT FITTING PLUG CONNECTION

Bernard Edward Shlesinger, Jr., 9411 Macklin Ct., Alexandria, Va. 22309

Division of Ser. No. 212,091, Dec. 27, 1971, Pat. No. 3,853,377. This application Aug. 19, 1974, Ser. No. 498,576

Int. Cl. H01r *3/04*

U.S. Cl. 339—117 P **17 Claims**



1. A connector element for electrical devices and the like, comprising;

a. a conductive sheath having an expansible core receiving portion including an inside wall,

b. a core of fluid under compression which exerts an expansion force on the inside wall of said receiving portion,

c. said sheath including means for permitting flexing of said core receiving portion inwardly and outwardly, and

d. said sheath being substantially less compressible than said fluid.

2. A removable reusable electrical connector element for mating connector components and the like, comprising:

a. a conductive sheath having a substantially regularly shaped surface and a resilient, compressible, flexible and expandible spring wall portion,

b. a core fluid at all times under compression and at all times exerting a force on said spring wall portion,

c. said spring wall portion being slightly and non-abruptly deformed by said fluid and at all times under stress,

d. said sheath including means for permitting flexing of said spring wall portion inwardly and outwardly, and

e. said sheath being substantially less compressible than said fluid.

3,880,493

CAPACITOR SOCKET FOR A DUAL-IN-LINE PACKAGE

James Albert Lockhart, Jr., Basking Ridge, N.J., assignor to Burroughs Corporation, Detroit, Mich.

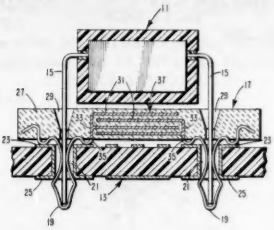
Filed Dec. 28, 1973, Ser. No. 429,075

Int. Cl. H05k *1/18*

U.S. Cl. 339—147 R **5 Claims**

1. In a socket formed of dielectric material having terminals for receiving the pins of a microelectronic integrated circuit component and for insertion into a circuit in assembled relationship, said circuit having the characteristics of producing transient interference, means for decoupling from said microelectronic integrated circuit component transient interference arising from said circuit when said microelectronic integrated

circuit component is connected thereto, said decoupling means being encapsulated in said socket; and leads affixed to



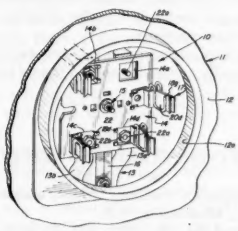
said decoupling means, said decoupling means being interconnected between said terminals by said leads.

3,880,494

SOCKET BASE ASSEMBLY

Ronald H. Reed, Versailles; Joseph C. Drilling, and Lary D. Jones, both of Lexington, all of Ky., assignors to Square D Company, Park Ridge, Ill.

Filed Apr. 25, 1974, Ser. No. 464,286
Int. Cl. H01r *13/16, 13/40*
U.S. Cl. 339—219 R **7 Claims**



1. A socket base assembly for an electrical device comprising an apertured panel of insulating material fixedly mounted on a support, said panel having an aperture adapted to be aligned with a current-carrying means positioned therebehind; jaw means having a base portion with peripheral segments thereof impassable relative to said aperture and a central segment accommodated within said aperture, the configuration of said central segment corresponding substantially to the aperture configuration, a pair of complemental elongated jaws intergral with said base portion and offset relative to said central segment and projecting angularly outwardly from said base portion, said jaws being biased toward one another for clamping engagement with a portion of the electrical device; and exposed fastening means engaging said central segment for securing in electrically conductive relation said jaw means to the current-carrying means.

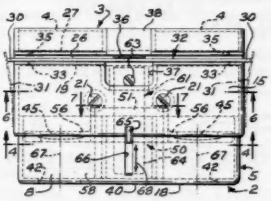
3,880,495

STEREO VIEWING APPARATUS

Joseph J. Roubal, 5135 W. 22nd Pl., Cicero, Ill. 60650
Continuation of Ser. No. 814,497, Mar. 17, 1969, abandoned, which is a continuation of Ser. No. 539,974, Apr. 4, 1966, abandoned. This application Dec. 16, 1970, Ser. No. 98,947

Int. Cl. G02b *27/22*
U.S. Cl. 350—142 **1 Claim**

1. In stereo viewing apparatus, rear means for locating stereo information to be viewed, slidably adjustable means arranged mounting stereo viewing objectives for focus adjusting of the stereo viewing objectives in a back and forth movement, and frontal means arranged fixed and spaced with respect to said rear means and said frontal means having fixedly located peep openings that are arranged at a suitable distance of an open space with respect to said focus adjustable stereo



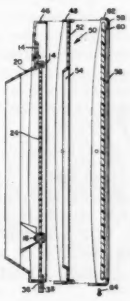
viewing objectives and whereby when the operator peers into said peep openings he views at the suitable distance of the open space in said focus adjustable stereo viewing objectives the stereo information located by said rear means.

3,880,496

ATTACHABLE POLARIZED INNER WINDOW FOR CONVEYANCES

G. Kurt Davidyan, Gladwyne, Pa.; Richard W. Kraus, Claymont; Robert D. Patrick, Wilmington, both of Del., and Leo R. Scott, Wyomissing Hills, Pa., assignors to American Polarizers, Inc., Reading, Pa.

Filed June 4, 1973, Ser. No. 366,457
Int. Cl. G02b *5/30*
U.S. Cl. 350—156 **3 Claims**



1. An attachable polarized inner window for conveyances comprising:

a frame member having a rearwardly extending peripheral flange spaced from the outer edges of the back of the frame member and adapted to be inserted into a window recess adjacent its walls.

a first polarizer rotatably mounted on the frame member forwardly of the flange, a portion of said first polarizer depending below the frame member to provide for manual rotation of the first polarizer,

a mask mounted on the frame forwardly of the first polarizer, and

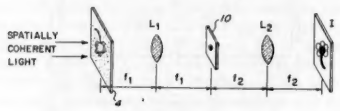
a second polarizer fixedly mounted on the frame forwardly of the mask.

3,880,497

METHOD OF STORING OPTICAL INFORMATION ON A RANDOM CARRIER

Olof Bryngdahl, Cupertino, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 339,677, March 9, 1973, abandoned. This application Nov. 8, 1973, Ser. No. 414,007
Int. Cl. G02b 5/18
U.S. Cl. 350—162 SF 14 Claims



1. A method of storing optical information on a random carrier comprising the steps of:

providing a carrier comprised of a pseudo-random distribution of pulses,

the spatial variation in the pulse parameters being at least equal to the wavelength of light;

modulating said distribution of pulses with optical information characterizing physical parameters of an illuminated object such that a microstructure is formed of a modified distribution of pulses with the optical information coded thereon; and

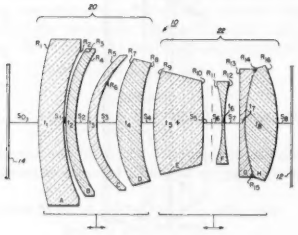
recording the microstructure on a storage medium.

3,880,498

ZOOM LENS ASSEMBLY

Wai-Min Liu, Arleta, and Roscoe J. Donnel, Glendale, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 15, 1973, Ser. No. 406,734
Int. Cl. G02b 15/16
U.S. Cl. 350—184 2 Claims



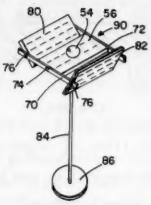
1. A zoom lens assembly substantially achromatic over the spectrum from about 4050A to about 5900A comprising an axially movable front lens group and an axially movable rear lens group, each lens group comprising four elements, the front movable lens group comprising, from the front to the rear, a first negative meniscus element convex to the front, a second negative meniscus element convex to the front, a third negative meniscus element convex to the front and a positive meniscus element convex to the front, the rear movable lens group comprising, from the front to the rear, a double convex element, a double concave element, and a doublet, said doublet comprising a double concave element the rear surface of which is cemented to a double convex element.

3,880,499

LIGHT PAINTING WITH STEPPED PRISMS

Robert L. Miller, 115 Wilmot St., San Francisco, Calif. 94115

Filed June 4, 1973, Ser. No. 366,891
Int. Cl. G02b 5/04
U.S. Cl. 350—286 13 Claims



1. A reflective stepped multiprism slab comprising:

a circular member;

first and second complementary transparent stepped prism sheets having complementary openings with concave sides, each of said sheets having a planar surface and a saw-toothed surface with said saw-toothed surfaces matingly engaged and said circular member rotatably contained in said openings;

a reflective film intermediate said saw-toothed surfaces; and

a rod rigidly, centrally secured to said circular member.

3,880,500

MIRRORS HAVING STRETCHED REFLECTIVE SHEET MATERIALS

Charles Kojabashian, Sudbury, Mass., assignor to American Velcro, Inc., Manchester, N.H.

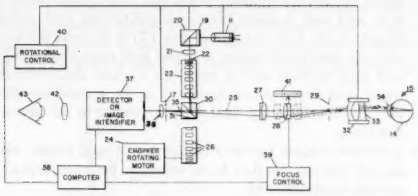
Filed Dec. 28, 1973, Ser. No. 429,279
Int. Cl. G02b 5/08
U.S. Cl. 350—310 12 Claims

1. A planar mirror having at least one reflective surface formed by a metallized thin film reflective sheet material in a stretched condition over a supporting frame comprising: a frame defined by peripheral members connected in end-to-end relation, each member having a neutral axis of substantially zero deflection due to bending forces applied to said member; a first metallized thin film reflective sheet material in a stretched condition over a first side of said frame; a second thin film sheet material in a stretched condition over the opposite side of said frame; means for securing each of said sheet materials to peripheral portions of said frame while maintaining them in a stretched condition over said frame, said sheet materials being substantially similar and maintained in substantially identical stretched conditions such that the bending and compressive forces on the frame members due to each stretched sheet material are in balanced equilibrium with the bending and compressive forces due to the other stretched sheet material and a continuous and optically correct reflecting mirror surface is thereby created on at least one side of the frame.

3,880,501
OPTICAL SYSTEM FOR OBJECTIVE REFRACTOR FOR THE EYE

Charles R. Munnerlyn, Fairport, N.Y., assignor to Tropel, Inc., Fairport, N.Y.

Continuation of Ser. No. 351,488, April 16, 1973, abandoned. This application May 17, 1974, Ser. No. 470,679
Int. Cl. A61b *3/10*
U.S. Cl. 351—8 **13 Claims**



1. In an optical system for an objective refractor for the eye including a source of radiant energy formed in a pattern directed along a path aligned with said eye, optical elements along said path for varying the angle of incidence of said radiant energy on said eye, and a detector for receiving radiant energy reflected from the retina of said eye for producing a useable output as a function of the focus of said reflected radiant energy, the improvement comprising:

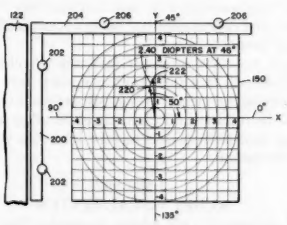
a. a polarizing beam splitter arranged for receiving said radiant energy from off the axis of said path and directing a polarized portion of said radiant energy along said path through said optical elements toward said eye, said radiant energy reflected from said eye travelling back along said path and being incident on said polarizing beam splitter; and

b. means between said optical elements and said eye for altering said polarization of said radiant energy so said polarization of said polarized radiant energy reflected from said eye is oriented to pass straight through said polarizing beam splitter to said detector.

3,880,502
OPHTHALMOLOGICAL APPARATUS AND PROCESS HAVING INDEPENDENT ASTIGMATIC AND SPHERICAL INPUTS

William E. Humphrey, Oakland, Calif., assignor to Humphrey Instruments, Incorporated, Berkeley, Calif.

Continuation-in-part of Ser. No. 263,329, June 15, 1972, Pat. No. 3,822,932. This application July 8, 1974, Ser. No. 486,279
Int. Cl. A61b *3/00*
U.S. Cl. 351—39 **1 Claim**

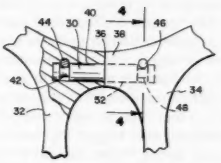


1. A process for describing astigmatic effects of a cylinder lens in power and variable rotational alignment relative to a preselected view path on a patient having vision correction of a cylindrical prescription of known power and known angular rotation, said process comprising the steps of: providing a patient viewing station; providing an image to be viewed along a light path to said image; placing said cylinder prescription of known power and known rotation between eyes of said patient and said view path; determining cylindrical lens power and angle of said patient as viewing said target through said prescription; providing a coordinate plot having first and second axes; plotting on said coordinate the vector of the power and doubled angle of cylinder of said known cylindrical prescription; plotting from said vector the determined cylinder power and doubled angle of said patient through said known prescription; locating on said coordinate plot a coordinate point relative to said first and second axes to determine the power and doubled angle of said corrected prescription.

3,880,503
ADJUSTABLE EYEGLASS FRAME

Modine P. Uribe, 2423 Olivia Ave., Yuma, Ariz. 85364

Filed Nov. 19, 1973, Ser. No. 417,271
Int. Cl. G02c *1/06, 5/02*
U.S. Cl. 351—60 **2 Claims**



1. In an eyeglass frame: a pair of lense rims; a nose abridging means interconnecting said rims; a pair of temple bars each hinged to one of said lense rims on a substantially vertical axis; said nose abridging means pivotally interconnecting said rims on a substantially horizontal axis thereby allowing said temple bars individual freedom of adjustment in upward and downward directions about said substantially horizontal axis;

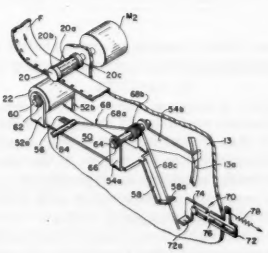
a bearing pin pivotally interconnects and supports said rims at said nose abridging means;

a retainer means is disposed near each end of said bearing pin, said retainer means being fixed to at least one of said lense rims and adapted to prevent axial dislocation of said bearing pin relative to said lense rims, but permitting pivotal freedom of at least one of said lense rims about said substantially horizontal axis and relative to said bearing pin.

3,880,504
PRESSURE RELIEF MECHANISM

Edgar Samuel Marvin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 3, 1972, Ser. No. 294,711
Int. Cl. G03b *19/18*
U.S. Cl. 352—29 **11 Claims**



1. For a motion picture camera having a film path leading past a sound recording head for recording of sound onto a

received film strip, a film advancing mechanism for driving said film past said sound recording head, said film advancing mechanism comprising:

a. a capstan adapted to be operatively driven at substantially a uniform speed, said capstan being positioned along said film path;

b. a pressure roller adapted to be moved between (1) a first position wherein the pressure roller is a spaced distance from said capstan such that a received film strip may be freely positioned and removed from between said pressure roller and said capstan and (2) a second position wherein the pressure roller is in resilient contact with said capstan and a received film strip for driving the film strip therebetween;

c. a mounting bracket for supporting said pressure roller, said bracket being movably secured to the motion picture camera relative to said film path for permitting said pressure roller to be moved between said first and second positions;

d. a trigger mechanism mounted for movement between (1) a first position wherein said mechanism is ineffective to cause said capstan to be driven, and (2) a second position wherein said mechanism is effective to cause said capstan to be driven at substantially a uniform speed; and

e. spring means connected to said mounting bracket and engageable by said trigger mechanism as said mechanism moves from its first position to its second position to urge said bracket in a direction to move said pressure roller to its second position, said trigger mechanism being disengaged from said spring means as said mechanism moves from its second position to its first position, thereby relieving the force exerted on said capstan by said pressure roller.

3,880,505

SINGLE FRAME MECHANISM FOR A MOTION PICTURE CAMERA

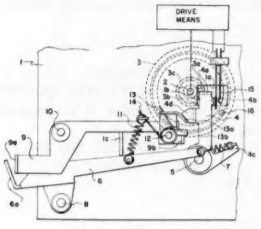
Heinz Peschel, Stuttgart-Zuffenhausen, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 5, 1973, Ser. No. 413,066

Claims priority, application Germany, Nov. 24, 1972, 7243151

Int. Cl. G03b *21/38*

U.S. Cl. 352—169 **3 Claims**



1. A motion picture camera having a shutter adapted for exposing image frames onto a received film strip, said camera comprising:

a. a frame;

b. a cam rotatably supported by said frame, said cam having a surface with a discontinuity therein, said cam being operatively coupled to the shutter of the camera;

c. drive means for rotatably driving said cam;

d. pawl means pivotably mounted to said frame such that said pawl means is engageable with said surface of said cam and is receivable in said discontinuity in said surface;

e. switch means connected to said drive means and conditionable by said pawl means to either (1) a first condition wherein said switch means energizes said drive means when said pawl means is removed from said discontinuity in said surface and (2) a second condition wherein said switch means de-energizes said drive means when said pawl means is received in said discontinuity;

f. a first release member supported by said frame, said first release member being movable between first and second positions;

g. resilient means coupling said pawl means to said first release means, said resilient means for urging said pawl means between (1) a first position wherein said pawl means is restrained from being received into said discontinuity in said cam surface when said first release member is in said first position thereby conditioning said switch means in its first condition and (2) a second position wherein said pawl means is urged into engagement with said cam surface and is received by said discontinuity when said first release means is in its second position thereby conditioning said switch means in its second condition;

h. a second release member supported by said frame, said second release member being movable between first and second positions; and

i. means coupled to said second release member, said means being adapted to cooperate with said pawl means to initiate movement of said pawl means from its first position toward its second position when said second release member is moved from its first position toward its second position.

3,880,506

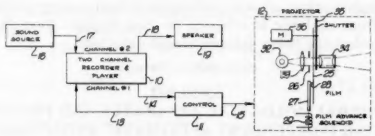
ADJUSTABLE SPEED PROJECTOR WITH SYNCHRONIZED SOUND RECORDER

Guy C. Caraway, Downey, Calif.

Division of Ser. No. 242,470, Apr. 10, 1972, Pat. No. 3,779,632 which is a continuation-in-part of Ser. No. 89,861, Nov. 16, 1970, and a continuation-in-part of Ser. No. 91,061, Nov. 19, 1970. This application Aug. 20, 1973, Ser. No. 389,957

Int. Cl. G03b *21/38, 21/12*

U.S. Cl. 352—194 **9 Claims**



1. A one-cycle drive mechanism comprising:

a continuously rotating drive wheel;

a driven member;

a cam wheel having a lobe and a dwell, said cam wheel being mounted so that said lobe of said cam wheel is capable of engagement with said continuously rotating drive wheel and said dwell of said cam wheel is not capable of engagement with said continuously rotating drive wheel, said driven member being eccentrically connected to said cam wheel; and

means for normally retaining said cam wheel in an angular position such that said dwell is nearest said drive wheel, said retaining means being responsive to an actuating signal to release said cam wheel to allow said dwell to engage said drive wheel to turn said cam wheel through one revolution.

3,880,507

AUDIO VISUAL SYSTEM

Francis T. Adams, Jr., c/o Adams Associates, Box 798, Devon, Pa. 19333

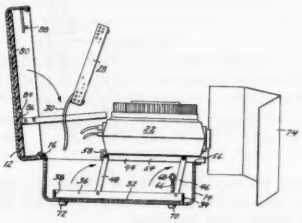
Continuation-in-part of Ser. No. 146,709, May 25, 1971, abandoned. This application Sept. 28, 1973, Ser. No. 401,728

Int. Cl. G03b *21/30, 31/06*

U.S. Cl. 353—17 **11 Claims**

1. A carrying and storage case for a sound and projection system comprising a body portion having opposite wall por-

tions and having an upwardly facing recess, a lid, means for hingedly connecting said lid to said body portion, said lid defining a downwardly facing recess, latch means for securing said lid in a closed position over said body portion with said upwardly and downwardly facing recesses defining a chamber for sound and projection equipment, a carrying handle mounted on said carrying case, a base platform mounted within said body portion, a projector platform overlying said base platform, and means connecting said projector platform to said base platform for moving said projector platform between a position overlying said base platform within said upwardly facing recess and away from said base platform a height sufficient to support a projector lens above the lip of said body portion while maintaining parallel relation to said



base portion, means for mounting sound reproducing apparatus to said body portion, said downwardly facing recess in said lid being lined with a foam material for cushioning a sound and projection system mounted within said carrying and storage case, and means on said lid for releasably supporting a housing for an auxiliary speaker, said foam material being disposed between said lid and said last named means to define as acoustic buffer to prevent vibration of an auxiliary speaker, and said means for releasably supporting a housing for an auxiliary speaker comprises a plate, means for hingedly connecting said plate to said lid, at least bottom and side means projecting from said plate to retain the speaker housing in position on said lid, and a latch for holding said plate in overlying relation to said lid so that a speaker housing is retained between said plate and said foam material.

3,880,508

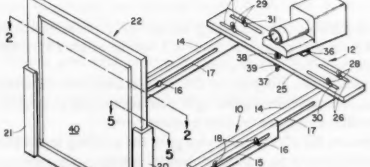
EASEL STRUCTURE FOR PAINTING

Beacher V. Hughes, 116 E. Railroad, Prophetstown, Ill. 61277

Filed Nov. 8, 1972, Ser. No. 304,670

Int. Cl. G03b *21/00*

U.S. Cl. 353—44 **9 Claims**



1. An easel structure for a painting composed of a base having a front end and a rear end; an easel detachably supported in upright position on the front end of the base; a canvas-like sheet of material supported on the easel having a fabric facing on the front side of the sheet and a relatively stiff plastic layer bonded to and on the rear side of the sheet, said sheet further being translucent and capable of showing from the front a slidetype projection projected on the rear surface of the sheet; a projector for showing slide projections supported for fore-and-aft movement on the base adjacent the rear end thereof and directed so as to project slide-type photo reproductions on the plastic side of the sheet.

3,880,509

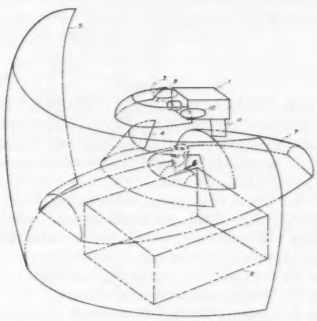
WIDE-ANGLE ON-AXIS PROJECTION SYSTEM

John W. Herndon, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 15, 1974, Ser. No. 451,635

Int. Cl. G03b *21/28;* **G09b** *9/08;* **G02b** *5/10*

U.S. Cl. 353—12 **4 Claims**



1. A wide-angle common axis projecting and viewing display system comprising:

a. a difusing type display screen,

b. projector means having a wide-angle lens for projecting image light rays,

c. a first reflector means for receiving said rays,

d. a see-through beam splitter reflector means being surfaced to provide a beam splitter effect and positioned to receive and reflect to said display screen said rays from said first reflector means while acting as a see-through window for a viewer monitoring said display screen along line of sight paths from a viewing point,

e. said first reflector and beam splitter reflector means being relatively shaped in curvature to cause all projected rays in each azimuth plane to pass through a common point, said point being also the mirror image of said viewing point such that the line of sight paths to said beam splitter reflector from said viewing point and the corresponding paths of projection rays reflected to said screen are collinear and represent the true vertical angles of the scene and thus constitute an on-axis system to present a real image on said display screen without peripheral distortions.

3,880,510

METHOD AND APPARATUS FOR INFORMATION RETRIEVAL

Sakae Fujimoto, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Continuation-in-part of Ser. No. 12,089, Feb. 17, 1970, Pat. No. 3,730,619. This application Oct. 27, 1972, Ser. No. 301,273The portion of the term of this patent subsequent to May 1, 1990, has been disclaimed.

Int. Cl. G03b *23/12, 21/28*

U.S. Cl. 353—26 **12 Claims**

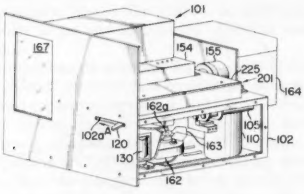
1. Method for information retrieval comprising

locating a film having information thereon within a cartridge;

mounting said cartridge upon a main body;

providing a setting of a desired film frame;
electronically generating a periodic pulse signal independent of film motion;
energizing driving means with the electronically generated pulses for advancing the film by a predetermined amount in response to each independently electronically generated pulse, and actuating counting means to count each independently electronically generated pulse from a zero detecting location on the film;
comparing the count of the counting means with the setting and stopping the film driving means upon coincidence; and
deenergizing said driving means when the film is stopped.

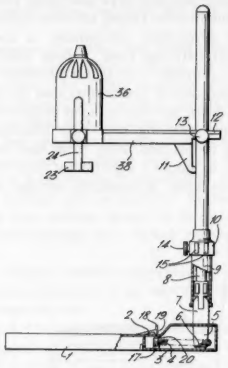
4. An information retrieval system having a main body and comprising



a cartridge detachably mounted on said main body and having a film enclosed therein with a plurality of informations recorded thereon and a zero position;
means for engaging and advancing said film;
means for driving said advancing means;
means for setting information retrieval instruction;
means for detecting said zero position;
counting means for starting the counting immediately after said zero position has been detected;
means for stopping said driving mean when said counting means reaches the setting of said instruction;
means for projecting an information retrieval from the stopped film; and
erratic operation preventive means for preventing the energization of said driving means when the film is stopped.

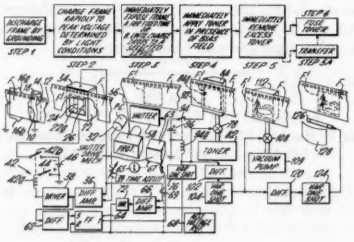
3,880,511
IMAGE PROJECTOR
Jose Manuel Alonso Astarloa, c/o Jose Ma Escuza 3-4a Planta, Bilbao (13), Spain
Filed Apr. 16, 1973, Ser. No. 351,389
Int. Cl. G03b *21/30, 1/42*
U.S. Cl. 353—79 **7 Claims**

1. A device for projecting a slide comprising a base, a column mounted on said base and upstanding therefrom on a vertical axis, first means for projecting a selected image on said base along a first projection axis, said first means being dependent from said column and said column being provided with second means for rotating said column through a 90° arc to a second position normal to said vertical axis, whereby said depending first means is rotated through a concentric 90° arc for rotating said projection axis to a second position normal to said first projection axis, said base comprising a platform and a casing, said platform including an underside panel and an elevated topside side panel and means for receiving a casing securing means, said receiving means being located in said platform, said casing underlying said underside panel of said platform and being provided with means for securing said casing to said platform. said topside panel having first and second apertures therein spaced one from the other, and said underside panel of said platform being provided with first and second apertures therein spaced one from the other, respective apertures in said topside and underside panels being registered, one with the other, and means for releasably biasing a projection screen in overlying position on said platform, said last mentioned means having opposed end segments received through respective pairs of registered apertures in said topside and underside panels, said opposed end segments



terminating in respective angular elbows received through respective apertures in said underside panel and in underlying, engaging relationship therewith.

3,880,512
IMAGE RECORDING APPARATUS FOR ELECTROPHOTOGRAPHIC FILM
Manfred R. Kuehnle, Lexington, Mass., assignor to Coulter Information Systems, Inc., Bedford, Mass.
Continuation-in-part of Ser. No. 361,951, May 21, 1973, which is a division of Ser. No. 260,782, June 8, 1972. This application Aug. 17, 1973, Ser. No. 389,124
Int. Cl. G03g *15/04*
U.S. Cl. 355—3 R **39 Claims**



1. Apparatus for recording images of a projected scene or the like on the photoconductive coating of an electrophotographic member which comprises:
A. means for projecting the image onto the coating and including controllable light passing means to enable controlled exposure of said coating,
B. means for electrically charging the coating in darkness at a rapid rate to a peak potential charge,
C. control means for operating the light passing means to effect exposure of the photoconductive coating to the projected image,
D. means for applying toner to the coating to render a latent charge image visible,
E. means for measuring the light intensity of the projected image before exposure and deriving a first signal representative of said intensity,
F. means for measuring the magnitude of the charge on the coating due to said charging and deriving a second signal representative of said magnitude,

G. means coupling the charging means with said control means to initiate exposure when said peak charge has been reached,

H. means for limiting one of

i. the extent of exposure due to operation of the light passing means to achieve a predetermined exposure and

ii. the operation of the charging means to provide a peak charge of predetermined potential, and

I. means for comparing the first and second signals and disabling that one of said charging means and light passing means which is not limited in response to the relationship represented by such comparison when the said one which is not limited reaches a value previously determined as substantially optimum for the light intensity measured.

3,880,513

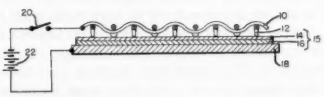
ELECTROPHOTOGRAPHY WITH A PHOTOCONDUCTOR COATED FINE MESH

Richard A. Fatland, Warrensville Heights, assignor to Horizons Incorporated, a division of Horizons Research Incorporated

Division of Ser. No. 321,181, Jan. 5, 1973. This application Mar. 15, 1974, Ser. No. 451,722

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 R **7 Claims**



1. An apparatus for generating an electrostatic image comprising:

an electrically conductive base layer;

a record sheet disposed on said base, consisting of a partially electrically conductive layer and a charge-supporting insulating layer, with the electrically conducting layer lying on said base;

a woven mesh screen lying on said charge-supporting insulating layer, at least that portion of the woven screen which is in physical contact with said charge-supporting layer being provided with a coating of photoconductive material which becomes electrically conductive when exposed to visible light radiation;

a source of potential;

means connecting said source of potential to said electrically conductive base layer and said woven mesh screen so as to apply a potential between said electrically conductive base layer and said screen; and

means to project an optical image onto said screen while said potential is applied whereby the illuminated areas of said photoconductive material become electrically conductive and said image is reproduced in said insulating layer as a latent image which can be electrostatically toned or developed to form a visible image.

3,880,514

ION PRODUCING SOURCE FOR ELECTROSTATIC RECORDING APPARATUS

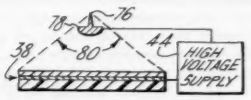
Manfred R. Kuehnle, Lexington, Mass., assignor to Coulter Information Systems, Inc., Bedford, Mass.

Filed Sept. 14, 1973, Ser. No. 397,307

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 R **7 Claims**

1. Apparatus for recording electrostatic images which comprises means for disposing an electrophotographic member at a predetermined location in an enclosure with its photoconductive coating in position to be charged, charging means comprising an ion-producing source structured to produce and make available to said coating ions for charging the same without subjecting said coating to adversely effective ultra violet radiation, means for exposing the charged coating to a light pattern and means for toning the coating after exposure, said ion-producing source including a corona producing knife edge member spaced from said location with the knife edge



facing away from said location, said knife edge member including a back blade of enlarged form facing said location and serving as ultra violet radiation shielding means for an electrophotographic film disposed at said location.

3,880,515

CARRIER LIQUID VAPOR RECOVERING DEVICE ELECTROPHOTOGRAPHIC APPARATUS

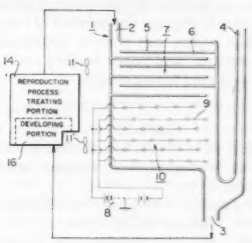
Hiroshi Tanaka, and Ikuo Soma, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed June 1, 1972, Ser. No. 258,653

Claims priority, application Japan, June 3, 1971, 46-38948

Int. Cl. G03g *13/10*

U.S. Cl. 355—10 **4 Claims**



1. In an electrophotographic copying device of the wet development type having a developing portion and a reproduction station, the improvement comprising a developer collecting device including a housing having an inlet means for receiving developer vapor generated at a reproduction process treating station in said copying device, an outlet for discharging air and a second outlet for discharging liquefied developer, baffle means mounted in said housing to provide a tortuous path for the developer passing through said housing, cooling means in said housing comprising a substance having a good heat conductivity for cooling the developer vapor to convert it into mist, and electric field applying means in said housing for collecting and liquefying said developer mist due to an electrostatic attraction by applying an electric field thereto, and means connected to said second outlet for leading said collected developer to the developing portion of said copying machine for reuse.

3,880,516

DIAGNOSTIC CIRCUIT BOARD

Donald S. Post, Fairport; Gerald R. Helbig, Webster, and Kenton W. Fiske, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 312,396, Dec. 5, 1972, abandoned. This application Feb. 22, 1974, Ser. No. 444,997

Int. Cl. G03g *15/22*

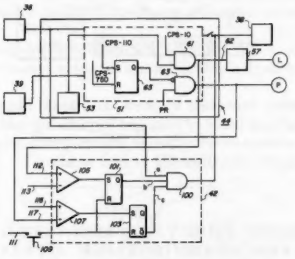
U.S. Cl. 355—14 **6 Claims**

6. In an electrostatic printing apparatus for reproducing copies of an original having a plurality of processing stations for producing copies of the original and sheet feeding and

transporting means for passing sheets through the machine for producing copies of the original thereon, the improvement including:

monitoring means for determining proper positioning of the copy sheets throughout their path of travel through the apparatus;

a pulse generator for producing a discrete series of pulses for each copy to be produced;



control means connected to said pulse generator to activate one or more of the processing stations, the paper feeding and transporting means and said monitoring means at preselected pulses to provide proper sequencing of the apparatus functions; and,

counter means connected to said control means and said pulse generator to register the number of the pulse in the pulse series at which said control means activates said processing stations, and paper feeding and transporting means and said monitoring means.

3,880,517

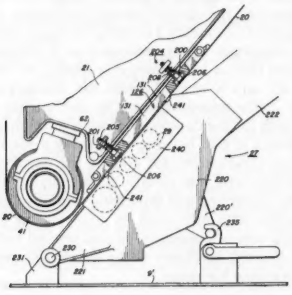
REPRODUCTION MACHINE DEVELOPER APPARATUS

Richard H. Dennie, Walworth, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed June 21, 1974, Ser. No. 481,601

Int. Cl. G03g *15/00*

U.S. Cl. 355—16 **3 Claims**



1. In a reproduction machine of the type incorporating a movable, flexible belt having a photoconductive surface on which a latent electrostatic image of the original being copied is formed and developed,

support means for said belt including an internal frame member, plural support rollers for said belt rotatably mounted on said frame member for supporting and guiding said belt in an endless path of movement, a platen for said belt disposed between a pair of said rollers, the surface of said platen facing said belt being substantially flat, and means to tension said belt whereby to draw said belt against said support platen flat surface to provide a substantially flat belt run whereat the image on said belt may be developed,

mounting means for supporting said platen on said frame member, said mounting means being adapted to permit displacement of said platen relative to said frame member in accommodation of unwarranted movement of said frame member,

developing apparatus opposite said platen for developing images on said belt flat surface, said developing apparatus being supported for movement relative to said platen;

means for locating said developing apparatus relative to said platen to provide predetermined spacing therebetween; displacement of said platen in accommodation of frame member movement being accompanied by conjoint movement of said developing apparatus to maintain said predetermined spacing therebetween, the improvement comprising:

means responsive to establishment of said predetermined spacing between said platen and said developing apparatus to generate a signal.

3,880,518

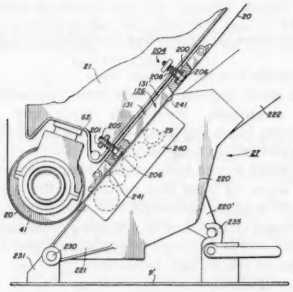
FLOATING DEVELOPER PLATEN FOR REPRODUCTION APPARATUS

Peter A. Chatfield, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed June 21, 1974, Ser. No. 481,602

Int. Cl. G03g *15/00*

U.S. Cl. 355—16 **4 Claims**



1. In a reproduction machine of the type incorporating a movable, flexible web having a photoconductive surface on which a latent electrostatic image of the original being copied is formed and developed,

support means for said web including an internal frame member, plural support rollers for said web rotatably mounted on said frame member for supporting and guiding said web in an endless path of movement, a platen for said web disposed between a pair of said rollers, the surface of said platen facing said web being substantially flat, and means to tension said web whereby to draw said web against said platen surface to provide a substantially flat run whereat an image on said web may be developed, the improvement comprising:

means for mounting said platen on said frame member for limited movement relative thereto whereby on unwarranted displacement of said frame member said platen may move relative thereto to retain said platen in operative contact with said web; and

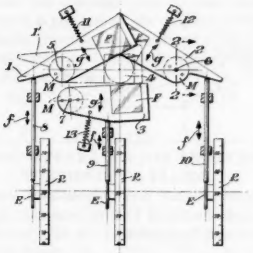
bias means for resiliently urging said platen against said web.

3,880,519

PROCESS AND APPARATUS FOR THE PREFILTERING AND FOR EXPOSURE INTERRUPTION IN ENLARGING APPARATUS

Siegfried Barbieri, Brixen, Italy, assignor to Durst AG Fabrik Fototechnischer Apparate, Bozen, Italy

Filed Sept. 20, 1973, Ser. No. 399,050
Claims priority, application Italy, Sept. 22, 1972, 29541/72
Int. Cl. G03b 27/76
U.S. Cl. 355—36 10 Claims



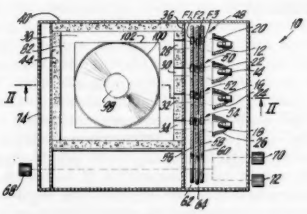
1. A process for prefiltering and exposure interruption in enlargers for copying color photographs by exposure to copying light emanating rays in a path, comprising the steps of partially inserting color filters relating to the three primary colors into the path of rays of the copying light into a position in which a desired degree of primary filtering is achieved for exposure of the light sensitive sheet material, securing said color filters in said position, obtaining sufficient exposure of the light sensitive layer pertaining to the particular primary colors, then inserting the respective filters for said particular primary colors for which sufficient exposure has been obtained completely into the path of said rays of said light for terminating the exposure of said layers for said primary colors, and returning all said color filters to their starting positions corresponding to said desired degree of primary filtering after the exposure of all of said light sensitive layers is completed.

3,880,520

COLOR ENLARGER AND ILLUMINATING SYSTEM THEREFOR

Louis L. Weisglass, New York, N.Y., assignor to Berkey Photo, Inc., Woodside, N.Y.

Filed Nov. 23, 1973, Ser. No. 418,726
Int. Cl. G03b 27/76
U.S. Cl. 355—37 20 Claims



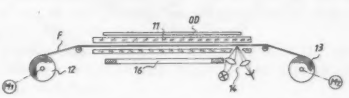
1. An illumination system for an enlarger whose objective lens projects an image of a picture area of a film onto a focusing plane, comprising source means forming a light beam, filter means in the path of only a portion of the beam for coloring a part of the beam, mixing chamber means having an entrance opening in the path of the beam beyond the filter means and having opaque reflective dispersing means for mixing the light of the beam entering said chamber means, said chamber means forming an exit opening larger than the picture area and directing light toward the film and the objective lens, and light control means removably mounted on the chamber and covering the opening when mounted on the chamber and allowing passage of light through a central portion of the opening and reflecting light impinging at a second portion covering the remainder of the opening, said control means including reflecting means along the second portion for reflecting light back into the chamber and a transparent diffuser covering the central portion, said diffuser having diffusion material distributed to achieve a greater diffusion power near the center thereof and a lesser diffusion power toward the outer periphery thereof.

3,880,521

DOCUMENT PRESENTATION DEVICE FOR USE WITH COPYING MACHINES

Rudolf Eppe, Taufkirchen; Gunther Schnall, Eching; Helmut Hosselbarth, Herford, and Heinz Schiffl, Munich, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 12, 1973, Ser. No. 396,458
Claims priority, application Germany, Sept. 13, 1972, 2244961
Int. Cl. G03b 27/46
U.S. Cl. 355—40 10 Claims



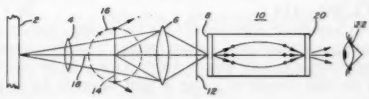
1. A document presentation device for use with a document reproducing machine having a copying aperature over which an original document to be reproduced is placed, comprising means for supporting an original document in register with the copying aperture; a plurality of overlays including several groups of overlays wherein each overlay of one group is related to an overlay of another group; drive means for moving selected overlays into register with the copying aperture; selector means actuatable to select the sequence in which successive selected overlays of a group are moved into register with the copying aperture by said drive means; and counter means for determining the number of copy sheets to be made from the original document and that overlay which registers with the copying aperture.

3,880,522

LOW TEMPERATURE DISAPPEARING FILAMENT OPTICAL PYROMETER

Thomas P. Murray, Pittsburgh, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Sept. 5, 1973, Ser. No. 394,605
Int. Cl. G01j 5/52, 5/54
U.S. Cl. 356—46 5 Claims



1. A low temperature disappearing filament optical pyrometer for measuring the temperature of a hot object comprising an image converter having a receiving screen for receiving a radiant energy image of a hot object,

said converter having a viewing screen for displaying visually the image received on the receiving screen with a

brightness varying with the intensity of the radiation received,

a wire heated by passage of an electric current through the wire,

an optical system for focusing the radiant energy image of the hot object whose temperature is to be measured and the heated wire on the receiving screen, and

means for varying the current through the wire thereby varying the brightness of its visual image on the viewing screen.

3,880,523

MULTIPLE CHANNEL COLORIMETER

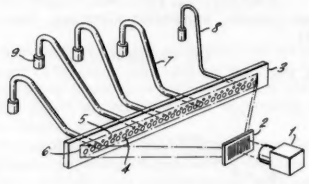
Alan John Thomas, Petersham, Richmon, England, assignor to The Rank Organisation Limited, London, England

Filed Aug. 17, 1973, Ser. No. 389,315

Claims priority, application United Kingdom, Aug. 17, 1972, 38414/72

Int. Cl. G01j *3/40, 3/12*

U.S. Cl. 356—79 **7 Claims**



1. In a multiple channel colorimeter comprising a light source, light diffraction means for producing a spectrum from the light emitted by the source, and light-receiving means including a detector device for receiving the spectrum-forming light after passage thereof through the test material, the improvement that the said light-receiving means comprises:

an apertured screen for receiving the spectrum-forming light on its front face, said screen having a plurality of apertures distributed to receive light in different parts of the spectrum, and

at least one light guide in the form of a fibre optic bundle which is formed at one end as a plug adapted to fit releasably into at least some of the apertures at the rear face of the screen and which carries the detector device at its other end.

3,880,524

AUTOMATIC ELLIPSOMETER

Frederick H. Dill, Putnam Valley, and Peter S. Hauge, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 25, 1973, Ser. No. 373,540

Int. Cl. G01n *21/40*

U.S. Cl. 356—118 **20 Claims**

1. An automatic ellipsometer for measuring characteristics of a sample disposed in a chosen incidence plane comprising:

a monochromatic light source for providing an incident light beam on said sample to cause a light beam to be reflected therefrom;

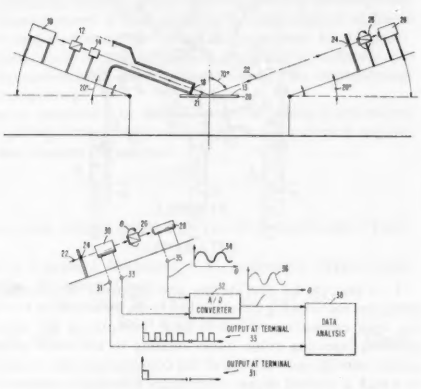
a first polarizing element in the path of said incident light beam, said first polarizing element being adapted to be fixed at a predetermined angle relative to said incidence plane;

adjusting means for setting the azimuth of said first polarizing element at different discrete predetermined angles relative to said incidence plane,

a second and rotating polarizing element in the path of said reflected light beam;

a photoresponsive device in the path of said reflected light beam responsive to said beam after it has passed through said second polarizing element, said photo-responsive device producing an electrical output in response to said reflected light beam's impinging thereon;

an angular encoder associated with said second polarizing element for providing first pulses for each revolution of said rotating second polarizing element and respective



second pulses for each chosen fraction of each of said revolutions;

an analog-to-digital converter responsive to the outputs of said angular encoder and said photoresponsive device for digitizing the output of said photoresponsive device in accordance with said second pulses; and

data analyzing means responsive to the application thereto of the output of said analog-to-digital converter and said first pulses for analyzing the output of said photoresponsive device.

3,880,525

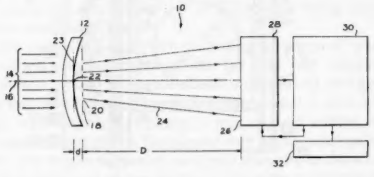
METHOD AND APPARATUS FOR DETERMINING THE REFRACTIVE CHARACTERISTICS OF A LENS

John R. Johnson, Natick, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed May 8, 1974, Ser. No. 468,039

Int. Cl. G01b *9/00*

U.S. Cl. 356—127 **15 Claims**



1. Apparatus for determining the refractive characteristics of a lens comprising:

a source of collimated light which produces a bundle of collimated rays parallel to and surrounding an apparatus optical axis;

means for positioning the lens in the bundle of collimated rays with its geometrical axis approximately aligned with the apparatus optical axis;

means disposed adjacent to the lens for selecting a spaced plurality of at least three non-coplanar rays from the bundle passing through and being refracted by the lens; and

a display surface disposed orthogonal to the apparatus optical axis and at a predetermined distance behind the lens so that the selected refracted rays are incident thereon, the display surface having a coordinate system thereon by which the displacement and direction of displacement are ascertained for the positions of incidence of the selected refracted rays relative to the positions of incidence of the selected rays on the display surface before the lens is positioned, the displacements and directions of displacement of the positions of incidence of the selected refracted rays being indications of the refractive characteristics of the lens.

3,880,526
METHOD AND APPARATUS FOR MEASURING THE TURBIDITY OF FLUIDS

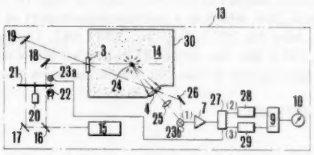
Goro Kobayashi, Oiso-machi, and Noboru Murata, Fuchu, both of Japan, assignors to OKI Electric Industry Co., Ltd. and Japan Society for the Promotion of Machine Industry, both of Tokyo, Japan

Filed Dec. 21, 1973, Ser. No. 427,217

Claims priority, application Japan, Dec. 28, 1972, 47-130201

Int. Cl. G01n *21/24*

U.S. Cl. 356—208 **10 Claims**



1. In a method of measuring the turbidity of fluid wherein two separate light beams are transmitted through the fluid to be measured in the form of a straightforwardly transmitted light beam and light rays which are scattered by the contaminant contained in said fluid, the two light beams being detected by photoelectric converting means after passing through the fluid to be measured to produce respective output signals from said photoelectric converting means respectively corresponding to said straightforwardly transmitted light and said scattered light rays, and the two output signals are compared to determine the turbidity of said fluid, the improvement which comprises producing a finely focused, intense laser beam of monochromatic light with a single laser device, dividing said beam into two separate laser light rays, alternately and cyclically interrupting said two laser light rays, projecting both of said interrupted laser light rays into said fluid to be measured at a common point in two different directions to form said straightforwardly transmitted light beam and said scattered light beam, respectively, receiving the laser light rays straightforwardly transmitted through said fluid and the scattered laser light rays scattered by the contaminant in said fluid by means of a single photoelectric converting element thus producing alternate output signal pulses respectively corresponding to said straightforwardly transmitted laser light rays and said scattered laser light rays, separating said alternate output signal pulses and comparing said separated output signal pulses to determine the turbidity of said fluid.

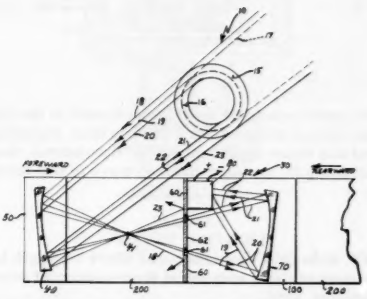
3,880,527
ANNULAR BEAM RADIAL SCANNER

Dennis N. Mansell, Palos Verdes, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sept. 23, 1971, Ser. No. 183,002

Int. Cl. G01j *1/00, 1/42*

U.S. Cl. 356—213 **4 Claims**



1. An apparatus for scanning and measuring the power output of any desired preselected annular portion of an annular shaped light beam, comprising:

a. a paraboloidal mirror so positioned that the annular shaped light beam impinges upon it and is reflected forwardly therefrom;

b. a movable flat mirror having a suitably located annular aperture, disposed forward of said paraboloidal mirror, for transmitting only the rays of the desired preselected annular portion of the annular shaped light beam which is reflected by said paraboloidal mirror;

c. a concave reflector, disposed forward of said movable flat mirror, for reflecting and converging the rays of the desired preselected annular portion of the annular shaped light beam which are transmitted by said movable flat mirror having a suitably located annular aperture;

d. and, means for measuring the power output of the rays of the desired preselected annular portion of the annular shaped light beam, with said power output measuring means so positioned that the rays of the desired preselected annular portion of the annular shaped light beam which are reflected and converged by said concave reflector impinge upon said power output measuring means and are, thereby, measured in power output.

3,880,528
LIGHT PROBE

Lawrence Christof Petersen, Aloha, and Bruce Michael Jerrick, Portland, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed July 2, 1973, Ser. No. 375,427

Int. Cl. G01j *1/42*

U.S. Cl. 356—225 **5 Claims**

1. A light probe including a photovoltaic sensor for a photometer, comprising:

a housing member having a cylindrical bore therein;

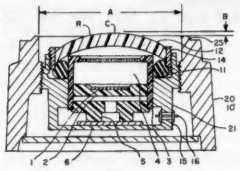
a probe body member containing said sensor adjustably mounted in said housing member;

lens means having an arcuate configuration mounted on said probe body member for receiving photons and radiating said photons to said sensor; and

eyebrow means extending along said housing member outside said cylindrical bore to provide controlled shading of said lens means,

said probe body member being adjusted with respect to said housing member so that said lens means is recessed into

said cylindrical bore with only the apex thereof protruding above said eyebrow means, said eyebrow means shading said lens means an increasing amount for angles which



are approximately 60° to 85° from normal to the optical axis thereof and preventing photons from impinging on said lens means at substantially 90° from normal, thereby correcting the cosine distribution curve of said sensor.

3,880,529

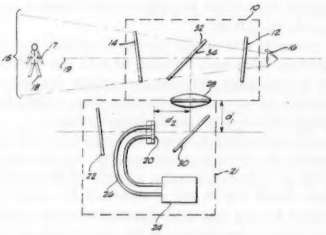
SIGHTING DEVICE

Joseph F. Althause, Canoga Park, and Albert W. Appel, Inglewood, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 545,073, April 25, 1966, abandoned. This application Aug. 16, 1971, Ser. No. 172,218

Int. Cl. G02b *23/10, 27/34*

U.S. Cl. 356—251 **7 Claims**



1. A sighting device, comprising:

means defining a field of view;

first reticle means for illumination by ambient light, said first reticle means being disposed outside said field of view;

second reticle means concentric with said first reticle means;

self-illuminating means coupled to said second reticle means for providing continuous illumination to said second reticle means; and

means projecting images of said first and second reticle means into said field of view.

3,880,530

WRITING UTENSIL

Otto Katz, Schwaback, Germany, assignor to A. W. Faber-Castell, Stein bei Nurnberg, Germany

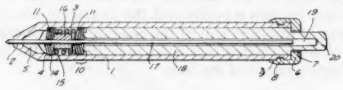
Filed Aug. 14, 1973, Ser. No. 388,232

Claims priority, application Germany, Aug. 16, 1972, 2240173

Int. Cl. B43k *21/22;* **B42k** *24/08*

U.S. Cl. 401—65 **8 Claims**

1. In a writing utensil, a combination comprising a barrel having an elongated inner chamber and opposite open ends; a pusher member slidably accommodated with axial clearance in said chamber and having a portion extending outwardly through one of said ends, so that the pusher member is slidable toward the other end by inward pressure upon said portion, said pusher member having an axial passage which is open in direction toward said other end; biasing means permanently opposing the sliding of said pusher member toward said other end; an abutment in said chamber adjacent said other end and forwardly of said pusher member; and at least one elastically deformable dished spring washer accommodated in said chamber intermediate said abutment and said pusher member, said washer having a side facing said pusher member, an outer circumferential edge face, a center aperture in registry with said passage and bounded by an inner circumferential edge



face both of said edge faces being normally inclined to the axis of said aperture, so that an elongated rod-shaped scribing member can be received in said passage and aperture and can extend outwardly through said other end with said inner circumferential edge face frictionally engaging said scribing member, an outer annular collar projecting toward said pusher member in the region inwardly adjacent said outer circumferential edge face, and an inner annular collar projecting away from said pusher member in the region outwardly adjacent said inner circumferential edge face.

3,880,531

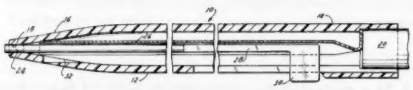
MOLD FOR WRITING IMPLEMENT BARREL OR THE LIKE

Marvin Kapilow, 8 Sound Rd., Rye, N.Y. 10580

Continuation-in-part of Ser. No. 360,070, May 14, 1973, Pat. No. 3,836,265, which is a continuation-in-part of Ser. No. 257,357, May 26, 1972, Pat. No. 3,771,882. This application Oct. 24, 1973, Ser. No. 409,048The portion of the term of this patent subsequent to Nov. 13, 1990, has been disclaimed.

Int. Cl. B43k *21/06*

U.S. Cl. 401—80 **5 Claims**



1. A one-piece integral, molded plastic tubular barrel for a writing implement, said barrel having a rear end and a tapered forward end, said barrel intermediate its ends having a bore of substantially uniform diameter throughout, the forward end including spaced slots caused by pin supports of interengaging surfaces of a mold core and a female mold to prevent breakage of the pin during molding, the tapered forward end having a coaxial reduced opening forwardly of the slots and communicating with the bore.

3,880,532

PORTABLE CLEANSING DISPENSER

Harry M. O'Hare, Anaheim, Calif., assignor to American Indian Development Corporation, Kansas City, Mo.

Filed Mar. 12, 1973, Ser. No. 340,449

Int. Cl. A46b *1/00*

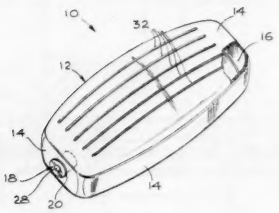
U.S. Cl. 401—292 **7 Claims**

1. An improved portable cleansing dispenser for liquid cleansing agents, said dispenser comprising:

a closed container formed of a plurality of flexible interconnected walls surrounding an interior cleansing agent storage space, at least one of said walls defining a plurality of scrubbing means, said container including closed fill means communicating between the exterior thereof and said space;

means in at least one of said walls defining openable dispensing means; and

a movable integral cap portion attached to one end of said container and being formed of a plurality of interconnected walls respectively configured as uniplanar extensions of corresponding walls of said container and enclosing said fill means and said openable dispensing means, said cap defining an opening alignable with said dispensing means upon rotation of said cap while attached to said container, whereby the cleansing agent is dispensable from said container.



3,880,533

SCAFFOLD AND LIKE STRUCTURES

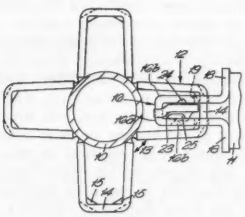
Peter Eric Gostling, Sutton Coldfield, England, assignor to C. Evans & Sons Limited, Ilford, Essex, England

Filed Oct. 10, 1973, Ser. No. 405,089

Claims priority, application United Kingdom, Oct. 13, 1972, 47336/72

Int. Cl. F16b *7/00*

U.S. Cl. 403—189 **9 Claims**



1. A locking assembly for use in interconnecting two members in builders scaffolding, which comprises a channel-shaped element having a base wall and side walls the ends of said side walls being fixable to one of said two members to be interconnected, and said base wall being inclined relative to said ends of said side walls, and a tapered wedge member mountable within said walls of said channel-shaped element to co-act with said base wall and, when in use and in its operative position, with a part of the other of said two members to be interconnected, said wedge member comprising a plate having first and second oppositely disposed wedging surfaces said first wedging surface co-acting with said base wall of said channel-shaped element and said second wedging surface co-acting with said part of the other of said two members to be interconnected, wherein said wedge member is of cranked formation to define an intermediate longitudinal bend lying parallel to said first wedging surface, said wedge member further being tapered from one end to the other to present an increased thickness at one end therof whereby, in use, movement of said wedge member from an operative positon into an inoperative position is such that said end of increased thickness engages the adjacent surfaces of said side walls of said channel-shaped element and thereby causes said wedge member to be retained in said inoperative position.

3,880,534

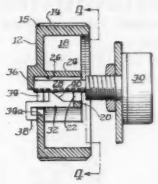
MOLDED CONTROL KNOB

Josef Schmidt, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed June 25, 1973, Ser. No. 373,166

Int. Cl. F16d *1/06*; **F05b** *3/00*

U.S. Cl. 403—230 **4 Claims**



1. A unitary knob for turning a D-shaft of an electrical control comprising a body having a front face and a cylindrical gripping portion, a receiver within said body having a floor portion which includes a resilient bridge spanning the receiver in the direction of shaft insertion, said bridge member extending from said receiver through said front face and having a hook shape with the reverse turned end of the hook shape formed integral with said face, a roof portion, and a rear opening for axially receiving the D-shaft and a stationary ramp element on said floor portion for receiving the flat portion of a D-shaft and directing the D-shaft during axial insertion into said receiver to press the cylindrical portion of the D-shaft against said roof portion and maintain the D-shaft in engagement with the roof portion whereby the shaft turns with the ramp preventing slipping.

3,880,535

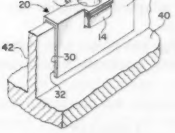
ADHESIVE FASTENING DEVICE

Walter Thomas Durham, Southfield, Mich.; George John Bury, Lake Villa, Ill., and Edwin Grant Swick, Bartlett, Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Nov. 14, 1973, Ser. No. 415,593

Int. Cl. F16b *41/00*

U.S. Cl. 403—241 **29 Claims**



1. In combination, a system for securing various workpieces to a support surface, including a rib-shaped protuberance with a predetermined, relatively thin, transverse dimension, a U-shaped body member adapted to slide over the protuberance and comprising a pair of legs interconnected by a bight portion, the legs providing a pair of generally opposing surfaces spaced from one another a distance substantially equal to the predetermined transverse dimension of the rib-shaped protuberance, the surface of the legs embracing both sides of the rib-shaped protuberance, a layer of heat activatable adhesive interposed between the protuberance and at least one leg surface to adhesively retain the body member on the support

surface upon the application of heat to the system, a stud member preassembled to the bight portion with means to prevent rotation of the stud relative to the body member, the stud member extending outwardly from the bight portion including a dimension transverse its longitudinal axis which is not substantially less than the space between opposing leg surfaces, the stud extending generally coplanar to the rib protuberance so that axial tension forces on the stud will tend to subject the adhesive bond to primarily shear forces.

3,880,536

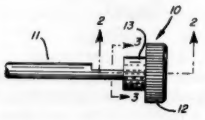
HUB CONSTRUCTION

Stephen Petrus, Cleveland, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 18, 1974, Ser. No. 451,941

Int. Cl. E05b *3/00*

U.S. Cl. 403—361 **2 Claims**



1. A one-piece, molded, self-retaining hub for retention to a generally cross-sectionally "D" shaped shaft, said hub comprising:

a body having an axially extending opening adapted to receive the shaft;

said hub having retainer means integral therewith for retaining the shaft therein by applying retaining forces to the outer peripheral surface of the shaft;

said retainer means comprising:

a first means adapted to apply a first pair of oppositely directed resultant forces to the flat portion and a substantially opposite portion of the outer peripheral surface of the shaft in response to insertion of the shaft into said hub, said first means comprising first and second resiliently deflectable cantilevered ribs adapted to engage the flat portion of the outer peripheral surface of the shaft and a curved, deflectable rib adapted to engage the outer peripheral surface of the shaft opposite the flat portion; a second means adapted to apply a second pair of substantially oppositely directed resultant forces to two other opposite peripheral portions of the shaft in reponse to insertion of the shaft into the said hub, the two other outer peripheral portions of the shaft each being intermediate the flat portion and the portion opposite the flat portion of the outer periphery of the shaft, said second means comprising third and forth resiliently deflectable cantilevered ribs adapted to engage the two other outer peripheral portions;

said curved rib being interposed said third and forth cantilevered ribs forming a smooth, continuous surface therewith.

3,880,537

ROAD HAZARD WARNING DEVICE

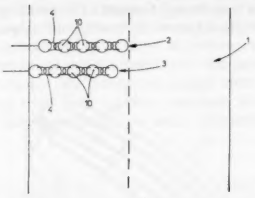
Frederick Charles Harris, Northfield; Barry Ward, Redditch, and Alan Ernest Barker, Dorridge, all of England, assignors to Hazard Warning Systems Limited, Birmingham, England

Filed Feb. 5, 1974, Ser. No. 439,954

Int. Cl. E01f *9/04*

U.S. Cl. 404—15 **9 Claims**

1. A road hazard warning device comprising a plurality of bodies each having an underside and an upper side, and a plurality of flexible links wherein each body defines a cavity open at the underside of the body, the maximum depth of each body, as measured from the underside to the upper side, is less than one-half the average distance across the underside, said links connect said bodies sequentially and each link connects together a pair of bodies and is of predetermined length, when



extended, whereby the spacing of adjacent bodies when the links are extended is predetermined by the links.

3,880,538

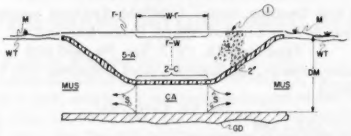
EMBANKMENT ON MUSKEG AND ASSOCIATED METHODS

Glenn R. Burt, 910 James St., Deer Park, Tex. 77536, and Richard L. Odsather, 1.8 Mile Gilmore Trl., Fairbanks, Alaska

Continuation of Ser. No. 258,457, May 31, 1972, abandoned. This application Feb. 11, 1974, Ser. No. 441,095

Int. Cl. E01c *3/00*

U.S. Cl. 404—28 **12 Claims**



3. An embankment road constructed of a prescribed particulate material on terrain comprising a surface layer of light compressible soil material of relatively high water content, this road comprising: a substrate mat structure placed upon this terrain so as to define the contemplated road and support said particulate road material; and an array of said road particulate materials distributed upon said mat structure so as to develop sufficient static loading on said compressible soil material at the center of the roadway to thereby render it relatively rigid and incompressible under contemplated surface loading and thus form an improved highly stable roadway structure; said mat being formed to comprise a continuous structural-integral layer of water-impervious materials while supporting the described loads without rupture thereof.

3,880,539

EXPANSION JOINT AND SEAL

Delmont D. Brown, North Baltimore, Ohio, assignor to The D. S. Brown Company, North Baltimore, Ohio

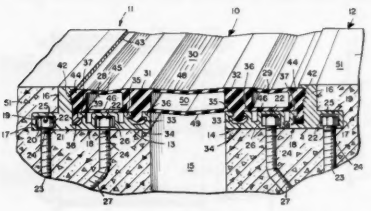
Filed May 14, 1973, Ser. No. 359,670

Int. Cl. E01c *11/12*

U.S. Cl. 404—48 **8 Claims**

1. An expansion joint structure useful as bridge deck and pavement joints comprising a pair of opposed, elongated, side frames respectively having a vertical wall and a bottom wall with an upwardly-facing, longitudinal, first groove in said bottom wall, said groove having opposed, horizontal lips, a second longitudinal groove formed at the juncture of said vertical and bottom walls and having a horizontal lip, means for rigidly mounting said frames along the respective edges of a pavement or bridge deck joint, an elastomer tread extending across said joint between said frames with longitudinal side portions of said tread overlying the bottom wall of each of said frames, elastomer, longitudinal beads on the bottom of said tread releasably interlocked in said grooves in said side

frames, said side portions of said tread being connected by elastomer wall means which spans the joint and which deforms as the joint contracts, said frames each having a longitudinal flange projecting horizontally away from said bottom wall at the bottom of said vertical wall, slot means in both said bottom wall and said flange for accomodating bolt means for securing



said frames to pavement or a bridge deck, and said frames comprising abutting, end-to-end sections with a gasket therebetween, a bracket attached to each end-to-end section by bolts mounted in said slot means, and additional bolt means extending through respective brackets for drawing said sections together and compressing the gasket therebetween.

3,880,540

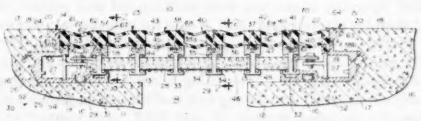
MODULAR EXPANSION JOINT

Michael C. Rizza, Walnut Creek, Calif., and Delmont D. Brown, North Baltimore, Ohio, assignors to The D. S. Brown Company, North Baltimore, Ohio

Continuation-in-part of Ser. No. 121,957, Feb. 8, 1971, Pat. No. 3,732,021. This application May 7, 1973, Ser. No. 358,059

Int. Cl. E01c *11/02*

U.S. Cl. 404—69 **12 Claims**



1. A shallow modular joint structure useful for spanning joints comprising a pair of elongated longitudinal frames adapted to be mounted at the respective edges of the joint, a plurality of elongated, longitudinal rails spanning the joint in parallel, spaced relationship to each other, said rails respectively having openings therein at longitudinally spaced intervals, said openings further being aligned in a plurality of transverse rows, said openings being of rectangular cross section and having a horizontal width greater than the vertical depth, and a plurality of joint-spanning load-bearing beams of rectangular cross section with a horizontal width greater than the respective vertical depth of each beam and extending through at least some of said rows of rectangular openings with said rails resting slidably thereon.

3,880,541

SEALING MEMBER, SEALING ASSEMBLY AND METHOD FOR ROADWAY CURB AND GUTTER INTERSECTIONS

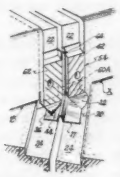
Donald J. McDowell, Riverside, and John C. Moerk, Jr., Buffalo Grove, both of Ill., assignors to Felt Products Mfg. Co., Skokie, Ill.

Filed May 3, 1973, Ser. No. 356,819

Int. Cl. E01c *11/02*

U.S. Cl. 404—74 **18 Claims**

1. A sealing member for bridging a gap between curb and second slab portions of adjacent roadway slabs in the region of the intersection of said curb and second slab portions, comprising: a first elastomeric sealing portion adapted to bridge the portion of a gap between curb portions of adjacent roadway slabs and to be sealingly secured thereto; and a second elastomeric sealing flap portion lying along a line of intersection with and extending away from said first portion, said second flap portion having sides edges extending away from said first portion and between said side edges defining generally flat flap segments and at least one preformed bulge having a point of beginning between said side edges and extending



toward and terminating at one of said side edges, said bulge progressively increasing in size from said point of beginning to said one side edge, thereby enabling said second flap portion to be adjustably skewed in the planes of the flat flap segments to one side in the region of said bulge into a plurality of angular positions to conform to a gap between said second portions which is skewed at an angle to said curb portions, said second flap portion being adapted to bridge the gap between said second slab portions and to be sealingly secured to said second slab portions to complete the sealing of a roadway gap.

3,880,542

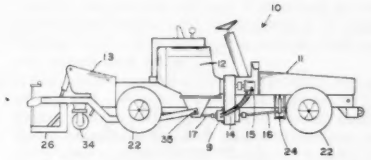
ASPHALT PAVING VEHICLES

Nathaniel John Mullen, 1522 Upton Ave. North, Minneapolis, Minn. 55411

Filed May 14, 1973, Ser. No. 359,634

Int. Cl. E01c *19/12*

U.S. Cl. 404—101 **1 Claim**



1. An asphalt paving vehicle for applying a uniform and smooth layer of asphalt comprising:

a frame having a front section and a rear section;

a power actuated hopper for receiving asphalt mix, said hopper located on the front of said frame, said hopper having means for directing asphalt mix into a conveyor; a conveyor located on said frame for conveying asphalt mix from said hopper to the rear of said frame;

a front driving member mounted on said frame for supporting and steering the asphalt paving vehicle including a pair of high flotation tires mounted on said front driving member for supporting the front end of said frame and said hopper when said hopper is filled with asphalt mix, a first differential connected to said front driving member for powering said front driving member, said first differential connected to a first output shaft, said front driving member including a first brake for stopping the paving vehicle and a power actuated member for steering said front driving member;

a rear driving member mounted on said frame for supporting and steering the asphalt paving vehicle including a pair of high flotation tires mounted on said driving member for supporting the rear end of said frame, a second differential connected to said rear driving member for powering said rear driving member, said second differential connected to a second output shaft, said rear driving member including a second brake for stopping the paving vehicle and a power actuated member for steering said rear driving member; said front driving member mounted on said frame for supporting and steering the asphalt paving vehicle and said rear driving member mounted on said frame for supporting and steering the asphalt paving vehicle coacting to produce an inside turning radius of about 10 feet;

a power source for driving said first output shaft and said second output shaft including an engine, a hydrostatic motor driven transmission for powering said first driving member through said first output shaft and said second driving member through said second output shaft; a hydraulic pump driven by said engine; said power source including a hydraulic motor operable for being driven by said hydraulic pump, said hydraulic motor operable for powering said vehicle through said hydrostatic motor driven transmission;

a floating screed located on the rear of said frame distributing and compacting the asphalt mix to produce a smooth roadbed, said screed pivotally mounted to said frame to thereby prevent deflection of said screed when said front driving member or said rear driving member pass over bumps without affecting the vertical position of said screed; and

a pair of rollers mounted to said front section of said frame, said pair of rollers operable for pushing a dump truck ahead of said asphalt paving vehicle.

3,880,543

JIG

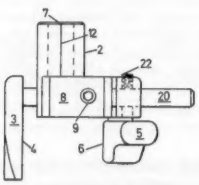
Albert Gillett, 3 Madge Hill Church Rd., Hanwell, England

Filed Aug. 7, 1973, Ser. No. 386,331

Claims priority, application United Kingdom, Aug. 16, 1972, 38247/72

Int. Cl. B23b *39/00*

U.S. Cl. 408—109 **4 Claims**



1. A manually operable jig for use in drilling holes in a wooden or like workpiece comprising a jig body, a drill guide member fixed on said body, a workpiece clamping wall disposed at one side of the body, a workpiece clamping arm support disposed at the opposite side of said body and a clamping arm pivoted on said support for movement toward or from a workpiece disposed between said wall and said arm, means for adjusting said wall relative to said body and locking it in any adjusted position, means for adjusting said clamping arm support relative to said body toward or away from said wall and locking it in any adjusted position, said clamping arm being manually operable to engage one side of edge of a workpiece introduced between said wall and arm and tightly urge the other side edge against said wall to grip the workpiece while the operator inserts a drill through said guide member to drill a hole in said workpiece.

3,880,544

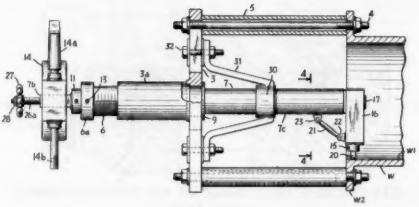
MACHINE TOOL FOR MACHINING A CIRCULAR SURFACE OF A WORK PIECE

Stephan C. Papadopulos, 114 38th St., Union City, N.J. 07087

Filed Apr. 16, 1973, Ser. No. 351,651

Int. Cl. B23b *49/00*

U.S. Cl. 408—111 **11 Claims**



1. A machine tool for machining a circular surface of a work piece, comprising an internally threaded first sleeve, means for supporting said first sleeve in axial alignment with said circular surface of the work piece, an externally threaded second sleeve coaxial in said first sleeve and having threads engaging the threads of said first sleeve, said second sleeve being rotatable in said first sleeve and thereby movable axially of said first sleeve, a hollow shaft extending through said second sleeve, bearing means supporting said shaft in said second sleeve for rotating in said second sleeve and axial movement with said second sleeve, said shaft having first and second end portions projecting from opposite ends of said second sleeve, a tool holder, means for mounting said tool holder on said first end portion of said shaft, said mounting means comprising guide means in which said tool holder is slidable toward and away from the axis of said shaft, a tool held by said tool holder and engageable with said surface, means operably connected with said second end portion of said shaft for rotating said shaft, means for adjustably positioning said tool radially inwardly and outwardly relative to said shaft, said shaft having an internally threaded portion and said tool positioning means comprising a control rod extending axially of said shaft and having external threads engaging said internally threaded portion of said shaft, said control rod extending beyond said second end portion of said shaft and being provided with means for rotating said control rod relative to said shaft and thereby moving said control rod axially of said shaft, and means connecting an inner portion of said control rod with said tool holder to convert axial movement of said control rod to radial movement of said tool holder along said guide means, and means for rotating said second sleeve relative to said first sleeve to move said shaft with said tool holder and tool axially of said shaft relative to the work piece.

3,880,545

FINE-BORING TOOL

Dieter Kress, Aalen, Germany, assignor to Mapal Fabrik fur Prazisionswerkzeuge Dr. Kress KG, Aalen, Germany

Filed Nov. 15, 1973, Ser. No. 415,992

Claims priority, application Germany, Nov. 27, 1972, 2258062

Int. Cl. B23b *29/02*

U.S. Cl. 408—153 **7 Claims**

1. A boring tool comprising:

a. a tool head having an axis and a surface circumferentially extending about said axis,

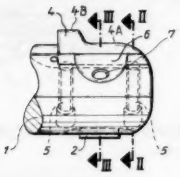
1. said surface being formed with a groove open in a direction radial relative to said axis and elongated in the direction of said axis;

b. a cutter blade received in said groove and projecting radially from said groove,

1. said blade having a cutting edge elongated in the direction of said axis, said cutting edge having two longitudinal portions;

c. adjusting means for adjusting the effective depth of said groove and for thereby adjusting the distance over which said blade projects from said groove; and

d. a plurality of guide means circumferentially spaced on said surface from each other and from said groove,



1. each guide means including a guide member having an outer, convex guide face elongated in the direction of said axis,

2. said guide faces and one of said longitudinal portions defining a cylinder about said axis,

3. the other longitudinal portion of said cutting edge being offset radially from said cylinder.

3,880,546

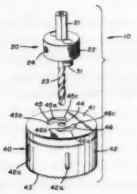
HOLE SAW ASSEMBLY

Fred Segal, 545 Fairhill Dr., Akron, Ohio 44313

Filed Mar. 13, 1974, Ser. No. 450,902

Int. Cl. B23b *51/04*

U.S. Cl. 408—204 **7 Claims**



1. A hole saw assembly, comprising;

A. an arbor having a forward planar face;

B. a cylindrical cutting member having

1. a base with a rearwardly presented planar face

2. a cylindrical body and

3. cutting teeth on the forward edge of said body;

C. locking and driving means

1. including at least two T-shaped studs carried by said arbor and adapted to engage said base of said cutting member; and

D. resilient means normally urging said locking and driving means toward said forward planar face of said arbor

1. whereby said arbor and said cutting member are interconnected with said forward planar face of said arbor in flush engagement with said rearwardly presented planar face of said cutting member.

3,880,547

RETARDING MEANS FOR GAS TURBINE DRIVEN VEHICLES

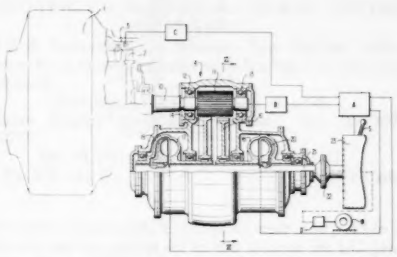
Hermann Hagen, Dachau, Germany, assignor to Motoren-Und Turbinen-Union Munchen GmbH, Munich, Germany

Filed Mar. 28, 1973, Ser. No. 345,515

Claims priority, application Germany, Mar. 28, 1972, 2214972

Int. Cl. F02c *1/06*

U.S. Cl. 60—39.16 R **31 Claims**



1. An installation comprising:

rotatable power turbine means,

power turbine shaft means rotatable with said power turbine means,

motive fluid generator means for supplying a motive fluid to rotatably drive said power turbine means,

output shaft means,

first selectively engageable transmissions means for transmitting rotational movement and torque between said power turbine shaft means and output shaft means with the relative direction of rotation of said power turbine shaft means and output means corresponding to transfer of driving forces from said power turbine shaft means to said output shaft means,

second selectively engageable transmission means for transmitting rotational movement and torque between said power turbine shaft means and output means with the relative direction of rotation of said power turbine shaft means and output shaft means being opposite of the relative direction of rotation transmitted by said first transmission means and corresponding to transfer of braking forces from said power turbine shaft means to said output shaft means,

and transmission control means for selectively engaging one of said first and second transmission means while disengaging the other of said first and second transmission means whereby said power turbine means can be selectively used to apply one of driving and braking forces to said output shaft.

3,880,548

INK PUMP

Raymond L. Kirby, Jr., 527 Damian St., Vandalia, Ohio 45377

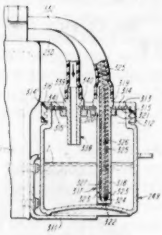
Division of Ser. No. 215,783, Jan. 6, 1972. This application July 5, 1973, Ser. No. 376,668

Int. Cl. F04d *29/38*; **B65g** *33/00*

U.S. Cl. 415—73 **2 Claims**

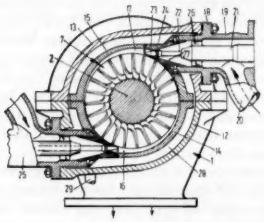
1. A pump, comprising: a liquid container including a plate, a one-piece pump body extending through the plate and into the container, the pump body having a straight bore and a liquid inlet providing communication between the inside of the container and the bore, the pump body having a flange and a threaded section on one side of the flange, a nut received by the threaded section, the plate being disposed and held between the flange and the nut, a curved tube connected to the pump body on the other side of the flange and communicating with the bore, a helical spring rotatable in the tube and having a portion extending into the bore, a straight rod disposed

substantially only within the portion of the spring in the pump body, the rod and the spring being in contact and being rotatable as a unit in the bore, and means for driving the spring and



the rod as a unit, there being only slight clearance between the spring and the bore so that as the spring and the rod rotate, liquid between the rod and the bore and between the coils of the spring is conveyed upwardly.

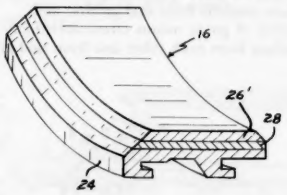
3,880,549
TURBINE
Jan Schrieken, Delden, Netherlands, assignor to Koninklijke Machinefabriek Stork, B.V., Hengels, Netherlands
Filed Nov. 19, 1973, Ser. No. 416,862
Int. Cl. F01d *3/02, 9/02, 9/06*
U.S. Cl. 415—95 **16 Claims**



11. A turbine assembly as defined in claim 9 wherein said valve housing assembly is separate from and removably secured to said turbine housing, said valve seat portion being separate from and removably secured to said valve housing assembly.

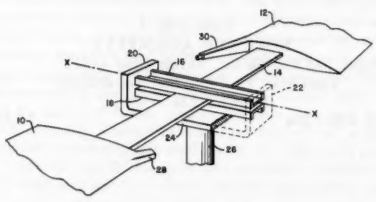
3,880,550
OUTER SEAL FOR FIRST STAGE TURBINE
Arthur F. Corey, Glastonbury, and Bruce E. Snyder, South Windsor, both of Conn., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Feb. 22, 1974, Ser. No. 445,047
Int. Cl. F01d *11/00*
U.S. Cl. 415—174 **4 Claims**

1. An outer seal for the first stage of a turbine engine, comprising an annular seal segment support member surrounding the blades of the first stage of the turbine engine; a plurality of seal segments supported on the seal segment support member; said seal segments having a layer of PWA 1045



sheet material bonded to a high strength Nickel-Chrominum alloy base material.

3,880,551
ROTARY HEAD ASSEMBLY FOR ROTARY WING AIRCRAFT
Adrian V. Kisovec, Wallingford, Pa., assignor to The Boeing Company, Seattle, Wash.
Filed Nov. 15, 1973, Ser. No. 415,872
Int. Cl. B64c *27/52*
U.S. Cl. 416—134 **13 Claims**

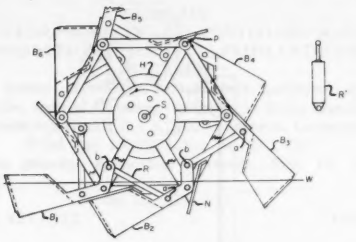


1. A Rotor Head Assembly for Rotary Wing Aircraft comprising a rotor hub, a pair of blades disposed on opposite sides of said hub, integral flexible strap means interconnecting said blades, and strap mounting means connecting said strap means to said hub intermediate said blades, said mounting means extending transverse to the longitudinal axis of said blades and having a degree of torsional flexibility about an axis to said longitudinal axis of the blades, said transverse axis intersecting the axis of rotation of said rotor hub which permits the mounting means and the strap mounted thereon to teeter about said transverse axis.

3,880,552
COUNTERACTUATED ARTICULATED WATERWHEELS
John S. Mason, 105 Deepdene Rd., Baltimore, Md. 21210
Filed Dec. 3, 1973, Ser. No. 420,920
Int. Cl. B63h *5/02*
U.S. Cl. 416—119 **7 Claims**

1. A counteractuated articulated waterwheel, driven by a conventional power source, and consisting of a hub which rotates above the surface of the water and open-ended buckets pivoted about its periphery which enter and exit the water as the hub rotates and swing about their pivots between a thrusting position against the hub and an extended position away from the hub, said hub being equipped with nests which close the open ends of the buckets when they are in the thrusting position and act as stops which restrict the swing of the buckets at their thrusting position and at their extended position, and which buckets are counteractuated so that, as thrust-

ing buckets are forced into their thrusting position against the hub by the thrusting action, the buckets adjacent to the thrusting buckets are forced into extended positions away from the hub.

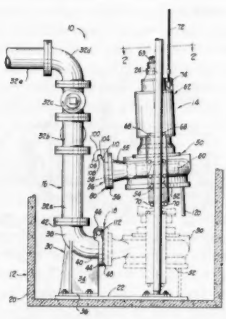


3,880,553

PUMPING SYSTEM

Dale E. Wolford, Ashland; David L. Meister, and Charles J. Taylor, both of Mansfield, all of Ohio, assignors to The Gorman-Rupp Company, Mansfield, Ohio

Filed Oct. 29, 1973, Ser. No. 410,793
Int. Cl. F04b *39/14*
U.S. Cl. 417—360 10 Claims



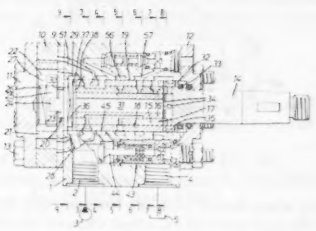
1. A pumping system comprising:
a. a submersible pump having an inlet and an outlet,
b. discharge conduit structure having a seal face,
c. a coupling body having first and second end faces and a flow passage ported on said faces,
d. means detachably connecting said coupling body to said pump so that said first end face is sealed against said pump with said flow passage communicating with said outlet,
e. guide means mounting said pump for vertical movement between an operating position in which said flow passage communicates with said discharge conduit structure and another position in which said pump is vertically spaced above said discharge conduit structure,
f. resilient seal means mounted on said second end face of said coupling body around said flow passage,
g. said pump being arranged on said guide means so that said second face of said coupling body is tilted down and away with respect to said seal face of said discharge conduit structure during movement of said pump along said guide means and so that said pump is rotatable to bring said seal means into sealing engagement with said seal face in said operating position,
h. hook structure on said coupling body extending toward said discharge conduit structure, and
i. hook supporting means carried by said discharge conduit structure in position to be engaged by said hook structure when said pump is lowered to said operating position, whereby said pump is clamped to said discharge conduit structure.

3,880,554

OPERATING MECHANISM FOR STEERING SYSTEMS OR THE LIKE

Poul Erik Termansen, and Johannes Vagn Baatrup, both of Sonderborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Oct. 25, 1973, Ser. No. 409,698
Claims priority, application Germany, Nov. 2, 1973, 2253575
Int. Cl. F01c *1/02*; F03c *3/00*; F04c *1/02*
U.S. Cl. 418—61 B 4 Claims



1. A metering unit for steering systems comprising a casing, a rotary piston in said casing having a rotatable movement relative to its own axis and an orbitable movement relative to the casing axis, a toothed ring member surrounding said piston, said piston having a central bore, a disk having a central bore attached to one side of said ring member, and a closure member attached to the other side of said ring member, said disk and said closure member constituting walls for expansible chambers formed between said rotary piston and said ring member, a rotary valve rotatable about said casing axis, a drive mechanism between said valve and said piston, said drive mechanism being in sealing engagement with said disk to enclose said piston central bore along with said closure member so that said piston central bore forms a fluid tight chamber.

3,880,555

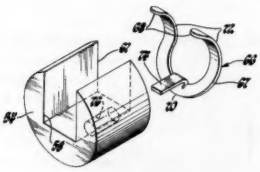
CORNER SEAL SPRING FOR ROTARY ENGINE

Robert L. Dega, Mount Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 14, 1974, Ser. No. 432,892
Int. Cl. F01c *19/10*
U.S. Cl. 418—121 3 Claims

1. In a rotary machine, a housing having an inwardly facing inner peripheral wall and a pair of spaced oppositely facing inner end walls, a rotor rotatably mounted in said housing having sides opposite said end walls and a plurality of corners that remain adjacent said peripheral wall as said rotor rotates, said rotor and said housing walls cooperatively defining a plurality of chambers separated by said rotor corners that expand and contract as said rotor rotates, each said rotor corner having an apex seal slot extending thereacross facing radially outwardly toward said peripheral wall, each said rotor side at each corner having a corner seal hole joining with one of said apex seal slots and facing outwardly toward one of said end walls, each said rotor side further having a side seal

groove extending along the periphery of said rotor side and joining at opposite ends with two of said corner seal holes, an apex seal mounted in each said apex seal slot and extending at opposite ends into the adjoining corner seal holes for engaging said peripheral wall, a side seal mounted in each said side seal groove and extending at opposite ends into the adjoining corner seal holes for engaging one of said end walls, a corner seal mounted in each said corner seal hole for engaging one of said end walls, each said corner seal having a centerline and a periphery engaged by the ends of two adjoining side seals and also having an apex seal slot receiving the adjoining apex seal whereby the corner seal provides a sealed juncture between the adjoining apex seal and two side seals, and a corner seal spring mounted in each said corner seal hole between the inner end of the corner seal and the bottom of the corner seal hole for biasing the corner seal against the respective end wall, each said corner seal spring having a circular edge that closely fits in the corner seal hole to center the spring therein and a



U-shape when viewed from the front or back that freely receives the apex seal and a C-shape when viewed from the side that fits between the inner end of the corner seal and the bottom of the corner seal hole, each said corner seal spring having a plurality of engaging portions that engage the inner end of the corner seal on one side of the corner seal spring, each said corner seal spring on the other side having a plurality of engaging portions which engage the bottom of the corner seal hole on the opposite sides of the adjoining apex seal slot in said rotor, all of said engaging portions of said corner seal spring being spaced from and about the centerline of said corner seal so that there is provided balanced off-center loading on the corner seal that does not interfere with corner seal movement, and each of said corner seal springs further having a tang that engages in a hole in the inner end of the corner seal which is eccentrically located relative to the corner seal centerline whereby relative turning between the corner seal spring the corner seal is positively prevented to prevent the corner seal spring from interfering with apex seal movement.

3,880,556

CORRECTIVE HEATING OF PNEUMATIC TIRES

Edward S. Brown; Rudy D. Henson; James D. Farris, all of Mayfield, Ky., and John A. Feola, Akron, Ohio, assignors to The General Tire and Rubber Company, Akron, Ohio

Division of Ser. No. 274,356, July 24, 1972. This application Nov. 14, 1973, Ser. No. 415,923

Int. Cl. B29h *5/02*

U.S. Cl. 425—11 **4 Claims**

1. An apparatus for heat treating a cured pneumatic tire comprising:

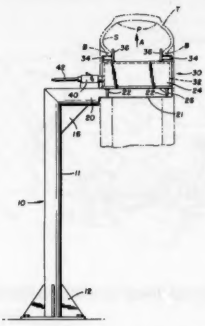
A. a vertically disposed support member having a base,

B. a horizontally extending support member attached to said member a selected distance above said base, and

C. a pneumatic tire heating means fixedly secured to said horizontally extended support member, said heating means including:

1. a pair of spaced, upwardly extending flanges adapted to fit between the annular bead portions of a pneumatic tire, and

2. a radiant heating device located between and vertically



below said flanges, said heating device adapted to direct heat only in an upward direction.

3,880,557

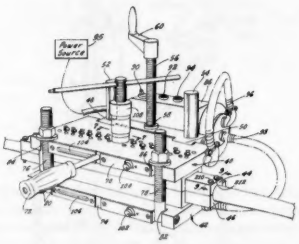
MOLDING APPARATUS FOR SPLICING ELECTRICAL CABLE

Arthur L. Nelson, La Jolla, Calif., assignor to Townsend and Townsend, San Francisco, Calif.

Division of Ser. No. 119,150, Feb. 26, 1971, abandoned. This application Feb. 20, 1973, Ser. No. 334,103

Int. Cl. B29c *27/14*

U.S. Cl. 425—108 **2 Claims**



2. A molding apparatus comprising: first and second mold forms moveable between open and closed positions and forming a mold cavity; means engaging the first and second mold forms for retaining the forms in their closed positions, the retaining means including first and second platens, a guide pin for aligning the first and second mold forms in the closed position, a threaded rod attached to the second platen and engaging the first platen through a threaded opening for bringing the mold forms into tight engagement, a threaded fastener mounted to the second platen and engaged by the first platen along a portion spaced from the engaged by the threaded rod; a hinge dividing portions of the first platen, a first portion being moveable between open and closed positions corresponding to the open and closed positions of the mold forms; each of the platens and of the mold forms including corresponding, aligned openings; fasteners received in said openings and attaching the platens to the respective mold forms; means in thermal communication with the mold forms for supplying heat to the mold cavity; means for supplying material to be molded to the mold cavity and for increasing the pressure within the cavity; at least one of the forms and of the correspondidng platen including a plurality of aligned openings communicating the mold cavity with the atmosphere for allowing gas and pressurized material supplied to the cavity to escape thereform to the atmosphere; and means connected to

the last mentioned platen for selectively blocking the apertures.

3,880,558

DEVICE FOR PRODUCING IN A CONTINUOUS MANNER REINFORCED PROFILE BELTS FROM EXTRUDED MATERIAL

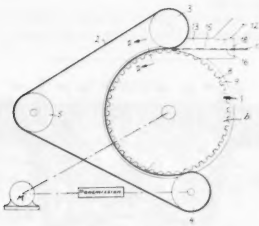
Rudolf Breher, Hausberge, and Herbert Kohlmeier, Uffeln b.Vlotho, both of Germany, assignors to Breco Kunststoffverarbeitungs GmbH & Co. KG, Vennebeck, Germany

Filed May 15, 1972, Ser. No. 253,453

Claims priority, application Germany, May 14, 1971, 2123902

Int. Cl. B29f *1/10*

U.S. Cl. 425—115 **9 Claims**



1. A device for making reinforced belts of extrudable material in a continuous manner, which includes: a rotatable forming wheel and an endless band looped over and engaging on at least a peripheral portion of said rotatable forming wheel so that in response to a rotation of said forming wheel together with said band successive portions of said band sealingly pass around said forming wheel and while forming a closed mold therewith, nozzle means located between said forming wheel and said band at the start of said mold, said nozzle means sealingly engaging said band and said forming wheel for tightly closing said mold at its start and for conveying extruded material under pressure into said mold, said nozzle means also including passage means for sealingly passing reinforcing strength members therethrough into said mold, driving means for driving said band and said forming wheel, said nozzle means having first passage means for conveying reinforcing strength members together, with extruded material thereabout into said mold and ahead of first passage means also having second passage means for conveying extruded material only into said mold.

3,880,559

SYSTEM FOR THE CONTINUOUS MANUFACTURE OF PANELS OF SYNTHETIC MATERIAL

Jean-Marie Raymond Peille, Esperaza, France, assignor to Societe Industrielle de Stratifies, Esperaza (Ande), France

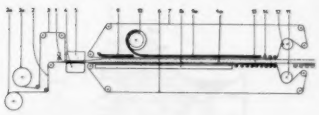
Continuation-in-part of Ser. No. 224,055, Feb. 7, 1972, Pat. No. 3,841,811. This application June 18, 1973, Ser. No. 371,216

Claims priority, application France, June 23, 1972, 72.22840

Int. Cl. B29d *27/04*

U.S. Cl. 425—115 **5 Claims**

1. Apparatus for the continuous manufacture of panels having a core of expansible synthetic material covered on opposite faces by continuous sheets comprising means for supporting first and second rolls of facing sheets adapted to be unwound and for defining the faces of a laminated panel, means for delivering expansible synthetic material between the sheets and to constitute the core of the panel, a first former for spreading and uniformly distributing the expansible material while it is between the facing sheets, a second former downstream from said first former, said second former including upper and lower endless conveyor belts each adapted to contact one of the facing sheets, said conveyor belts being disposed one above the other for translation of the panel and expansible material, said belts extending in a downstream direction from a location adjacent said first former, at least one flexible mesh mat overlying the lower run of the upper belt, said mat being constrained at its upstream end and being



deformable in all directions, said mat having a length so as to cover a major portion of the lower run of the upper belt, and a third former adjacent said second former, said third former including an adjustable guide adjacent marginal edges of the panel, the distance between said guides being less than the width of the facing sheets for folding at least one marginal edge portion of at least one facing sheet so that it is juxtaposed to a side face of said expansible material.

3,880,560

MOLDING MACHINE FOR SYNTHETIC RESIN ARTICLE

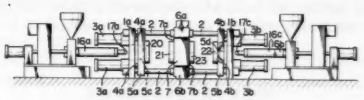
Shigetoshi Takahashi, Nagoya, Japan, assignor to Takahashi Seiki Co., Ltd., Nogoya-shi, Japan

Filed May 31, 1974, Ser. No. 475,200

Claims priority, application Japan, June 9, 1973, 48-68392

Int. Cl. B29c *9/00;* **B29f** *1/12*

U.S. Cl. 425—130 **3 Claims**



1. A molding machine for synthetic resin article, comprizing journals provided turnably and revolvably between upper and lower bearing boards, a central die plate whose both sides have been formed into mold fixing surfaces, die plates which move forward and backward by mold tightening cylinders, approachably to and releasably from each of said mold fixing surfaces of the central die plate, to be guided with rods mounted between the upper and lower positions of fixed boards provided on the base and said bearing boards, and a suitable number of injection devices respectively onto the base at the positions outside the fixed boards in such a manner that the nozzles of said injection devices are capable of advancing and retreating to and from respective injection openings of the movable die plate.

3,880,561

BRASSIERE MOLD-FORMING MACHINE

Richard A. Ferro, 80 Hunters Dr., Muttontown, N.Y. 11791

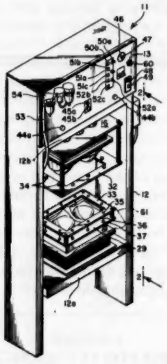
Filed Jan. 23, 1974, Ser. No. 435,974

Int. Cl. B29c *3/06*

U.S. Cl. 425—144 **20 Claims**

1. A brassiere molding machine comprising in combination: a support structure means for supporting each of upwardly facing and downwardly facing opposing male and female molds; each of male and female brassiere mold means mounted in face-to-face opposing relationship, mounted on said support structure means; pneumatic means for controllably reciprocatably advancing and retracting to and fro one of the male and female brassiere mold means toward and away

from the other of the male and female brassiere mold means; heating means for controllably heating male and female brassiere mold means; switch means for actuating and for deactivating each of the pneumatic means and the heating means controllably; the improvement being the combination of the above-noted means and said male and female brassiere mold means each defining a mold mateable with the mold of the other and each further defining as secured to its respective mold a substantially horizontally lying support plate, one of



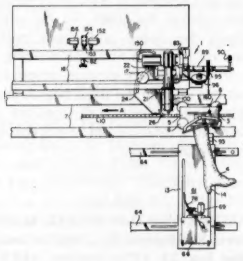
the male and female brassiere molds facing upwardly and the other facing downwardly, and the bottom one of the male and female brassiere mold means further defining substantially circumscribing fabric-sheet-mounting means in predetermined snug circumscription of and positioned above the bottom mold for supporting fabric sheet extending in a substantially horizontal plane at a position about even with an upper face of the bottom mold whereby the sheet to be formed may be of small area along its upper and lower faces.

3,880,562

HEEL FILLING DEVICE

Ladislav Hujik, Batawa, Ontario, Canada, assignor to Bata Industries Limited, Batawa, Ontario, Canada

Filed Mar. 20, 1974, Ser. No. 453,161
Claims priority, application Canada, Mar. 30, 1973, 167591
Int. Cl. B29c *5/00*
U.S. Cl. 425—151 **19 Claims**



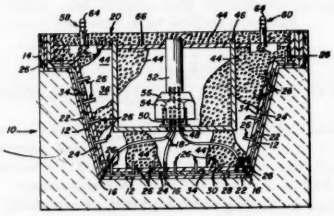
1. A filling device for use with a moulding apparatus in which moulds carried by mould carriers are fed along a path of travel seriatim, said device comprising track means extending parallel to the path of travel of said moulds; carriage means for movement along said track means; carrier engaging means for moving said carriage means along said track means in synchronism with said mould carrier and mould; dispensing means on said carriage means for dispensing a mouldable material into each mould; first switch means for actuation by a mould to cause said engaging means to engage a mould carrier, whereby the carriage means moves from a rest position along said track means with said mould; second switch means for actuation by a mould carrier to start dispensing of said mouldable material through said dispensing means; third switch means for actuation by said carriage means for stopping dispensing of mouldable material; and means for returning said carriage means with the dispensing means to said rest position.

3,880,563

MOLDING APPARATUS

Daniel A. DeVos, Brussels, Belgium, assignor to Pittsburgh Corning Corporation, Pittsburgh, Pa.

Filed July 6, 1973, Ser. No. 377,059
Int. Cl. B28b *21/78*
U.S. Cl. 425—175 **8 Claims**



1. In a molding apparatus comprising,

a shell having an outer surface with a preselected configuration and a cavity with an opening therein, said shell including at least one layer of a thermosetting resinous compound,

a porous fill positioned in said cavity, said porous fill having interconnected interstitial voids for the flow of fluid therethrough,

a seal member closing said opening in said shell cavity,

fluid inlet and outlet openings in said seal member for the circulation of a heat exchange fluid through said cavity to control the temperature of said shell outer surface,

heat sink elements embedded in said shell adjacent to said shell outer surface and extending into said cavity for transferring heat from said shell.

3,880,564

APPARATUS FOR PRODUCING PLASTIC SHEET OR FILM STOCK

Erich Beck, Worms, Germany; Albert L. Robbins, Alvin, and John C. Birdsall, Houstor, both of Tex., assignors to Askco Engineering Corporation, Pasadena, Tex.

Filed Nov. 16, 1972, Ser. No. 307,058
Int. Cl. B29d *7/02*; **B29f** *3/06*
U.S. Cl. 425—209 **24 Claims**

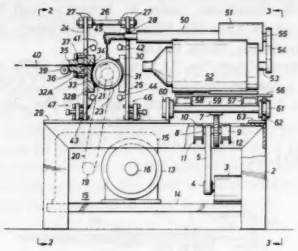
16. Apparatus for producing thermoplastic sheet stock or the like, comprising:

an extrusion member having a curved generally circular surface in one side and a sheet-die aperture communicating with said curved surface and extending through said extrusion member,

a cylindical roller member disposed adjacent said extrusion member eccentrically with respect to said surface,

a backup member disposed adjacent and on the opposite side of said roller member from said extrusion member and having a curved generally circular surface eccentrically disposed relative to said roller member, and

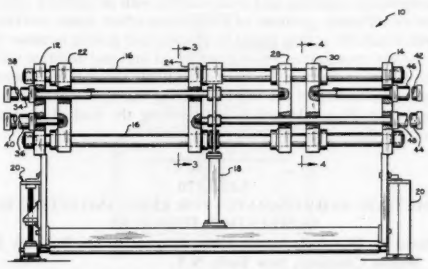
rotating means for axially rotating said roller member between said extrusion and backup members and for carrying thermoplastic material to said extrusion member and uniformly along the length of said die aperture.



3,880,565
TWIN CLAMP UNIT FOR BLOW MOLDING MACHINE

Robert A. Barr, Warren, and John W. Reed, Mountainside, both of N.J., assignors to Hoover Ball and Bearing Company, Saline, Mich.

Filed Apr. 22, 1974, Ser. No. 462,810
Int. Cl. B29c *1/16*
U.S. Cl. 425—150 **6 Claims**

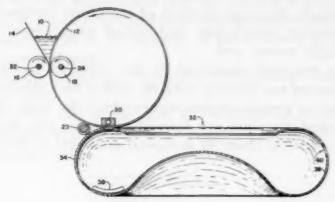


1. A molding machine including a twin blow-molding clamp unit comprising spaced first and second end frames, a plurality of tie rods connected to said end frames and extending therebetween, a first pair of opposed platens mounted in slidable relation on said tie rods adjacent to the first end frame and adapted to carry a first pair of mold sections on the sides of the platens facing each other, first coextensive fluid piston-and-cylinder assemblies mounted on said first end frame and having the piston rods thereof connected to the nearest of the platens of said first pair of platens, second coextensive fluid piston-and-cylinder assemblies mounted on said second end frame and having the piston rods thereof connected to the nearest of the platens of said second pair of platens, third coextensive fluid piston-and-cylinder assemblies mounted on said first end frame and having the piston rods thereof extending through said first pair of platens for free movement relative thereto and connected to the nearest of the platens of said second pair of platens, fourth coextensive fluid piston and cylinder assemblies mounted on said second end frame and having the piston rods thereof extending through said second pair of platens for free movement relative thereto and connected to the nearest of the platens of said first pair of platens so that the plurality of piston-and-cylinder assemblies are operable to close the pairs of platens only by application of fluid to the head end of the cylinders, and fluid supply means, fluid conducting means interconnecting said supply means and said assemblies, and control means associated with said conducting means for circulating fluid between said piston-and-cylinder assemblies to produce simultaneously movement of the platens of each of the first and second pairs in opposite directions toward open and closed positions.

3,880,566
APPARATUS FOR FORMING SPHEROIDAL PARTICLES

Ronald J. Komarek, Rochester, and Gordon L. Hume, Albion, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 7, 1974, Ser. No. 477,388
Int. Cl. B30b *3/00, 9/28;* **B29c** *3/00*
U.S. Cl. 425—362 **12 Claims**



1. Apparatus for preparing particles of solid material comprising

a. a movable molding ring having a multiplicity of generally cylindrical openings extending through said ring, the diameters of said openings being approximately equal to the depths thereof,

b. a pair of cooperating rolls positioned on opposite sides of said molding ring and adapted to rotate in unison, the surfaces thereof being spaced apart an amount sufficient for said molding ring to pass within the nip of said rolls,

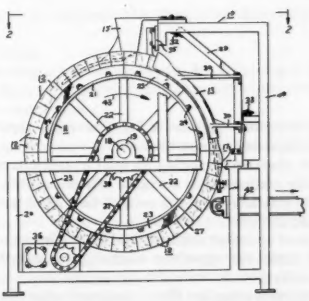
c. means for holding a mass of plastic material in the nip between said ring and one of said rolls whereby said plastic material is compressed into the openings of said ring during movement through said nip to form generally cylindrical particles, and

d. means for ejecting said cylindrical particles from said openings.

3,880,567
BAGEL FORMING APPARATUS

Michael Baruch Raichel, Beersheba, Israel, assignor to Ashray Samig, Inc., Philadelphia, Pa.

Filed May 31, 1974, Ser. No. 475,274
Int. Cl. A21c *11/00*
U.S. Cl. 425—364 B **17 Claims**



1. Apparatus for forming a lump of bagel dough into an uncooked bagel, comprising:

a. an elongated sheet of flexible material having a dough gripping surface, said sheet having a longitudinally ex-

tending central region and a pair of side marginal free edges which latter are turned up to form an open trough having a bottom and sidewalls with said dough gripping surface as the inside surface thereof, said trough being longitudinally closed upon itself so as to form an annular trough in which the open trough faces outward away from the center of the annulus and wherein the plane of the annular trough is oriented substantially vertically,

b. guide means cooperable with the said free edges of the said trough effective to curve them toward one another to thereby convert the portion of said trough engaged with said guide means into a circular cylindrical chamber,

c. drive means for continuously moving successive longitudinally disposed portions of the entire periphery of said annular trough into and out of engagement with said guide means, and

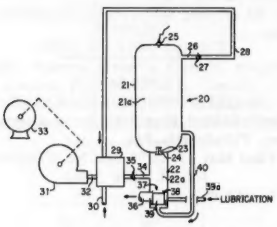
d. a mandrel supported in the chamber along the axis thereof and defining with the wall of the cylindrical chamber an annular region within which the lump of dough is rolled, kneaded and formed into a toroidal shape as the cylindrical chamber is moved relatively to the mandrel.

3,880,568

COMBUSTION METHOD AND APPARATUS FOR GENERATING REPETITIVE EXPLOSIONS

Rosser B. Melton, Jr., Helotes; John W. Colburn, Jr., and Charles D. Wood, III, both of San Antonio, all of Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Dec. 21, 1973, Ser. No. 427,040
Int. Cl. F23c *3/02*
U.S. Cl. 431—1 **10 Claims**



1. Combustion apparatus for generating repetitive explosions comprising, in combination:

a first chamber including an inlet in said chamber adapted to be connected to a source of combustible fluid;

ignition means mounted in said first chamber for igniting fluid therein;

a second chamber adjacent said first chamber and including an outlet for repetitive discharge of ignited fluid under pressure;

means providing for fluid communication from said first chamber to said second chamber; and

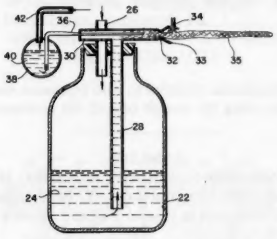
valve means disposed in said second chamber for preventing the passage of fluid under pressure from said second chamber into said outlet except when the pressure in said second chamber exceeds the pressure in said first chamber by a predetermined amount.

3,880,569

METHOD FOR THICKENING, IGNITING AND PROJECTING HYDROCARBON FUELS

William W. Bannister, John R. Pennace, and William A. Curby, all c/o Alice Sias Memorial Laboratory, 211 Summit Ave., Brookline, Mass. 02146

Continuation of Ser. No. 73,556, Sept. 18, 1970, abandoned, which is a continuation-in-part of Ser. No. 73,634, Sept. 18, 1970, Pat. No. 3,684,733. This application Dec. 26, 1972, Ser. No. 318,422
Int. Cl. F23j *7/00*; **C10l** *7/00*
U.S. Cl. 431—4 **3 Claims**



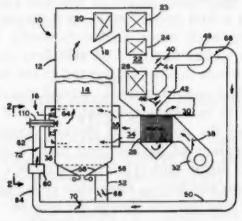
1. A method for gelling a normally liquid hydrocarbon comprising admixing said hydrocarbon with an additive capable of effecting gelation of the hydrocarbon upon reaction with a suitable gelling initiator; placing said gelling initiator in a second containiner; mixing the liquid fuel and additive with the gelling initiator in the barrel of a flame thrower in proximity to the orifice of the barrel; ejecting the hydrocarbon as a gelled jet from said orifice and igniting the fuel at a point beyond the orifice.

3,880,570

METHOD AND APPARATUS FOR REDUCING NITRIC IN COMBUSTION FURNACES

David M. Marshall, Akron, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Sept. 4, 1973, Ser. No. 394,234
Int. Cl. F23l *7/00*
U.S. Cl. 431—4 **4 Claims**



1. A method of inhibiting the formation of nitric oxide from the combustion of fuel including a furnace chamber and a passageway in gas receiving communication therewith and having at least one burner port, a register assembly having a discharge end opening to said burner port, a fuel nozzle extending through the register assembly and having a discharge end opening within said port, a deflector plate disposed in surrounding relation to said nozzle discharge end, a conduit extending through said register assembly in spaced concentric relation about the nozzle and having a discharge end opening adjacent said deflector plate and comprising the steps of:

supplying combustion air to the register assembly for discharge to said burner port,

imparting a whirling motion to the combustion air passing through said register assembly,

combining the fuel and air to produce a combustible mixture,

igniting the combustible mixture in the burner port to form a combustion zone within said furnace chamber,

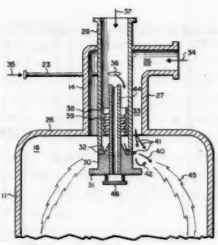
withdrawing flue gas from said passageway, and

conveying the flue gas to the conduit for discharge into the combustion air within the burner port along a path substantially parallel to the central axis of said port, said flue gas absorbing some of the heat of combustion thereby depressing the combustion zone temperature.

3,880,571
BURNER ASSEMBLY FOR PROVIDING REDUCED EMISSION OF AIR POLLUTANT

Richard R. Koppang, Cypress; Harland L. Burge, Jr., Tarzana; Wallace A. Carter, Fullerton, and Ellis W. Sheffield, Upland, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed July 26, 1973, Ser. No. 383,008
Int. Cl. F23m *3/00*
U.S. Cl. 431—8 **8 Claims**



1. A method of controlling the combustion of reactants in a forced-draft burner of the type having a combustion zone, an oxidizer tube in communication with the combustion zone, a fuel distribution tube coaxially mounted with the oxidizer tube and extending to within the combustion zone, comprising the steps of:

selecting an oxidizer and fuel flow rate in approximately stoichiometric proportion to achieve a predetermined heat input rating;

providing a preselected number of radially aligned fuel orifices of predetermined diameter and total area equally distributed about a circumference of the fuel distribution tube, the total area of said orifices being selected in accordance with the expression;

$$A = \frac{Q}{C \quad \Delta P/\rho}$$

where:

Q = flow rate (cu. ft. per minute)

A = orifice area (sq. inches)

C = constant including the discharge coefficient and a unit conversion factor

ΔP = pressure differential across said orifice (psi)

ρ = specific weight of fluid (lbs/ft^3) and the number of orifices being determined in accordance with the expression:

$$B_f = \frac{N d_f}{\pi D_p}$$

where:

$0.5 > B_f > 0.25$

B_f = ratio of total number of fuel orifice times their diameter to fuel distribution tube circumference

N = number of radial fuel orifices

d_f = fuel orifice diameter (inches)

D_p = fuel distribution tube diameter

providing a deflector disc affixed to the combustion zone end of the fuel distribution tube and having a diameter selected to provide an effective cross-sectional area of the disc which is 20 to 55 percent of the oxidizer annulus cross-sectional area;

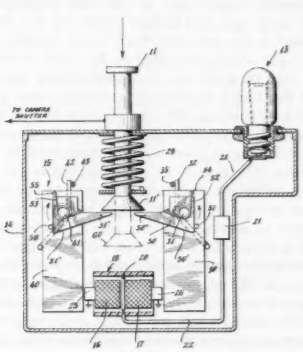
controlling the momentum of the fuel and oxidizer reactant streams, and

controlling the fuel exiting the fuel orifices to provide a penetration depth, whereby to minimize the production of nitrogen oxides.

3,880,572
PIEZOELECTRIC FLASH LAMP IGNITION

Paul O. Haugsjaa, Acton, and Daniel C. Casella, South Hamilton, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Continuation-in-part of Ser. No. 330,557, Feb. 8, 1973, abandoned. This application June 17, 1974, Ser. No. 479,701
Int. Cl. H01v *7/00*
U.S. Cl. 431—98 **5 Claims**



1. A piezoelectric photographic flash lamp igniter comprising

an outer casing,

a socket having a pair of electrodes for receiving a photographic flash lamp therein being attached to and insulated from the outer casing,

a piezoelectric high voltage generating device disposed within and attached to the outer casing, the device comprising

a pair of substantially identical piezoelectric elements positioned end to end, the abutting ends being of a like polarity and being commonly electrically connected to a first one of the pair of electrodes, and

a pair of conductive impact receiving caps being in mechanical and electrical engagement with the other opposing end of each of the piezoelectric elements, the caps being electrically coupled to the other of the pair of electrodes,

means for simultaneously impacting each of the impact receiving caps on the piezoelectric elements with a force which is equal to and in the opposite direction of the force applied to the other impact receiving cap so that a

high voltage signal is applied across the photographic flash lamp to cause ignition thereof, and the net kinetic energy transferred to the outer casing is substantially zero, and

means for actuating the impacting means.

3,880,573

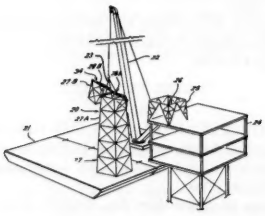
FLARE TOWER

Eugene H. Simmons, Houston, Tex., assignor to Hudson Engineering Corporation, Houston, Tex.

Filed May 20, 1974, Ser. No. 471,675

Int. Cl. F23d *13/20*

U.S. Cl. 431—202 **12 Claims**



1. Apparatus, comprising an offshore platform having a source of waste gas, and a flare tower on the platform for burning said waste gas, said flare tower including a tower having a lower section mounted on the deck of the platform near one side thereof, and an upper section pivotally connected to the lower section for swinging about a generally horizontal axis from an inverted position to one side of the lower section to an erected position above said lower section, and a pipe having a lower section supported by the lower tower section with its lower end connected to said source of waste gas, and an upper section supported by the upper tower section for swinging with said upper tower section, from its inverted into its erected position, into a position in which its lower end is aligned for connection with the upper end of the lower pipe section and its upper end is disposed outwardly of the one side of the platform, said upper pipe section having means thereon near its upper end for igniting waste gas flowing upwardly through said pipe, the center of gravity of the upper tower and pipe sections being disposed outwardly of the pivotal connection of said upper tower section to said lower tower section, in all positions of said upper tower section as it moves from inverted to erected position, and said tower including means for securing said upper tower section to said lower tower section to hold it in its erected position.

3,880,574

CERAMIC COMBUSTION LINER

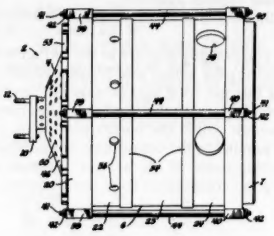
John A. Irwin, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 15, 1974, Ser. No. 460,964

Int. Cl. F23m *5/04*

U.S. Cl. 431—353 **3 Claims**

1. A combustion liner for a combustion apparatus comprising, in combination, a dome defining the upstream wall of the liner; a plural number of aligned ceramic wall rings defining the side wall of the liner, one ring being adjacent to the dome; an outlet fitting abutting the farthest downstream wall ring; means for aligning the wall rings with the dome and outlet fitting; means providing a resilient compressive connection in the side wall between the dome and the outlet fitting; and means independent of the wall rings interconnecting the dome and the outlet fitting including tension means connected between the dome and outlet fitting and struts engaging the



dome and outlet fitting to establish the spacing between the dome and outlet fitting.

3,880,575

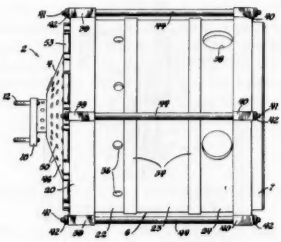
CERAMIC COMBUSTION LINER

Kenneth R. Cross, and Neville B. Edenborough, both of Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 15, 1974, Ser. No. 460,965

Int. Cl. F23m *5/04*

U.S. Cl. 431—353 **2 Claims**



1. A combustion liner for a combustion apparatus comprising, in combination, a dome defining the upstream wall of the liner; a plural number of alinged ceramic wall rings defining the side wall of the liner, one ring being adjacent to the dome; means for aligning the said one ring with the dome; an aligning ring disposed at each junction between adjacent wall rings engaging a radially facing surface of each wall ring to align the wall rings; an outlet fitting abutting the farthest downstream wall ring; and means interconnecting the dome and the outlet fitting including tie rods distributed circumferentially of the liner between the dome and outlet fitting.

3,880,576

METHOD FOR LIGHTING A MAIN BURNER FOR HEATING HIGH VELOCITY HIGH PRESSURE TURBULENT AIR

Ivan L. Smith, Port Arthur, Tex., assignor to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 368,796, June 11, 1973, abandoned, which is a division of Ser. No. 201,011, Nov. 22, 1971, Pat. No. 3,768,964. This application Apr. 22, 1974, Ser. No. 462,671

Int. Cl. F23l *9/04*

U.S. Cl. 432—29 **5 Claims**

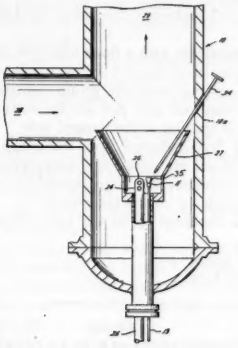
1. In a hot air heater having a main burner for heating high velocity, high pressure, substantially greater than atmospheric pressure turbulent air therein, an orifice-diffuser pilot comprising an orifice plate, combustion chamber, and a diffuser adjacent the main burner, and a main heater expanding dif-

fuser chamber means surrounding the main burner and pilot, a method comprising the steps of,

a. passing high pressure air through a precisely formed sharp edge restrictive orifice and then downstream to a mixing chamber,

b. passing high pressure fuel gas through a second precisely formed sharp edge restrictive orifice and then downstream to the mixing chamber,

c. controlling the upstream supply of fuel gas and air through their respective sharp edge restrictive orifices for



providing a combustible mixture down to a pressure of at least 55 percent of the pressure upstream of the orifices,

d. passing said controlled combustible mixture through the pilot orifice plate, combustion chamber, and diffuser for instantly lighting the orifice-diffuser pilot adjacent the main burner for lighting the main burner, and

e. passing the high velocity high pressure turbulent air over the main heater expanding diffuser chamber means for being heated while the main burner maintains steady burning with no flame-out when heating the high pressure turbulent air therein.

3,880,577

TONER IMAGE FIXING DEVICE

Makoto Tomono; Ken Nakamura; Niriyoshi Tarumi, all of Tokyo, and Masayuki Sato, Otsuki, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

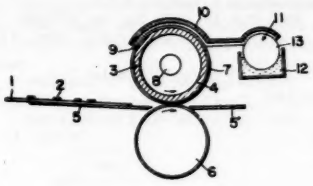
Filed Sept. 7, 1973, Ser. No. 394,972

Claims priority, application Japan, Sept. 9, 1972, 47-89629

Int. Cl. G03g *13/20, 15/20*

U.S. Cl. 432—60 **4 Claims**

1. A device for fixing a toner image to a support member bearing said toner image thereon, comprising: thermo-fixing means having a metallic micro-porous surface and being heated to a temperature sufficient to fix the toner image to the support member, said metallic micro-porous surface having a



plurality of fine pores less than 1 micron in size and a porosity of less than 25%; and releasing agent feeding means for feeding a releasing agent onto said metallic micro-porous surface.

3,880,578

HEATING EQUIPMENT FOR BRAZING ALUMINUM RADIATOR CORES

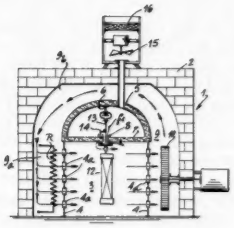
André Chartet, 2 Bis Avenue du Chateau, Meudon, Hauts-de-Seine, France

Division of Ser. No. 69,593, Sept. 4, 1970, Pat. No. 3,769,675.

This application June 25, 1973, Ser. No. 372,945

Int. Cl. F27b *9/24*

U.S. Cl. 432—243 **17 Claims**



1. A heating furnace for continuous heat treatment of parts, comprising a longitudinally extending enclosure, means for heating said enclosure, an insulated duct extending parallel to said enclosure and communicating therewith through a slot, a conveyor located in said insulated duct, means carried by said conveyor and extending to said enclosure through said slot to carry said parts, and means to blow gas in said duct for maintaining gas pressure therein higher than in said enclosure to supply gas thereto through said slot.

3,880,579

THERMO-PRINTING PROCESS

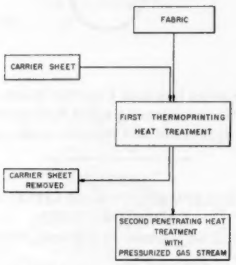
Henri Renaut, Roubaix, France, assignor to Societe Anonyme dite: Etablissements P. Lamaire & Cie

Filed Mar. 19, 1973, Ser. No. 342,364

Claims priority, application France, Mar. 17, 1972, 72.10115

Int. Cl. D06p *5/02;* B41m *5/26*

U.S. Cl. 8—2.5 3 Claims



1. An improved process for the thermoprinting of fabrics providing penetration of the printed design into and through the body of the fabric, wherein designs in vaporizable dyes are transferred by heat from a moving carrier sheet onto the surface of the moving fabric, which comprises the steps of:

a. contacting the carrier sheet, bearing designs in vaporizable dyes, with the surface of the fabric;

b. heating said carrier sheet to vaporize said dyes;

c. transferring the design from said carrier to the surface of said fabric by condensing the vapors of said dyes thereon;

d. separating the carrier sheet from the design-bearing surface of said fabric and cooling said fabric

e. distributing the dye-design, condensed on said fabric, through the body of said fabric by a second heating step comprising the application of a pressurized heated gas stream directed substantially perpendicular to the surface and through the body of said fabric, to force vapors of said dyes from the surface of the fabric substantially perpendicularly to the surface and into the body of said cooled fabric to condense therein.

3,880,580

METHOD OF ACTIVATING POLYMERIC MATERIALS

Carl Horowitz; Leon Pinczuk, and Michael Dichter, all of Brooklyn, N.Y., assignors to Polymer Research Corporation of America, Brooklyn, N.Y.

Continuation-in-part of Ser. No. 105,670, Jan. 11, 1971, abandoned. This application Sept. 14, 1973, Ser. No. 397,426

Int. Cl. C23c *3/00*

U.S. Cl. 8—4 9 Claims

1. Method of activating a surface of a polymeric material so as to render the same amenable to further treatment such as dyeing, which comprises treating said polymeric material with an aqueous solution of a water soluble silver salt and with a strong base whereby colloidal silver becomes deposited on the surface of said polymeric material, and subjecting the thus pretreated of said polymeric material to the action of a strongly ionic agent selected from the group consisting of strong acids and strong bases while in contact with a hydrocarbon solvent, whereby the corresponding ion from said strongly ionic material is grafted onto the thus pretreated surface of said polymeric material, rendering the same easily reactable with reactive agents such as dyes.

3,880,581

PROCESS FOR TREATING FABRICS AND FABRICS OBTAINED THEREFROM

Razmic S. Gregorian, Aiken, S.C., and Hans R. Hoernle, Augusta, Ga., assignors to United Merchants and Manufacturers, Inc., New York, N.Y.

Division of Ser. No. 209,456, Dec. 17, 1971, Pat. No. 3,797,996. This application Dec. 11, 1973, Ser. No. 423,683

Int. Cl. D06m *15/20*

U.S. Cl. 8—114.5 8 Claims

1. A process for making a decorative flocked fabric comprising:

a. coating a substrate with a flock adhesive binder wherein said substrate is a napped fabric composed of textile materials selected from the group consisting of nylon, cellulosic materials and polyacrylic materials, wherein the binder is applied to the napped side;

b. applying a flock selected from the group consisting of nylon, cellulosic materials, and polyacrylic materials to the coated substrate and permanently securing the flock to the substrate by curing the binder;

c. applying a chemical shrinkage agent directly onto the flock;

d. drying the fabric; and

e. washing the fabric.

3,880,582

ANIONIC DYEABLE POLYESTER

Albert R. Sawaya, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 27, 1969, Ser. No. 853,544

Int. Cl. D06m *5/10, 11/18, 13/54;* D06p *3/52, 5/04*

U.S. Cl. 8—115.5 18 Claims

1. An improved anionic dyeable polyester which has been reacted with concentrated phosphoric acid followed by reaction with an alkylene polyamine.

3,880,583

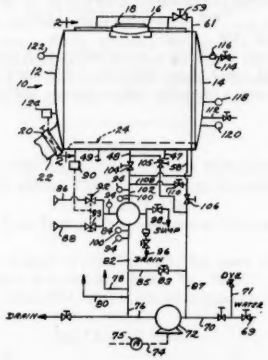
METHOD FOR DYEING TEXTILES

Roy Luckenbach, Asheboro, and John Funk, Greensboro, both of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Division of Ser. No. 237,683, March 24, 1972, Pat. No. 3,785,180. This application Oct. 29, 1973, Ser. No. 410,549

Int. Cl. B05c *8/02*

U.S. Cl. 8—158 3 Claims



1. A method of uniformly dyeing a plurality of discrete textile articles in a dye vessel of the type having a substantially cylindrically shaped interior wall with a horizontally disposed

longitudinal axis and spaced apart end walls, at least one row of nozzles arranged to discharge liquid in a generally tangential direction with respect to said interior wall, a closable loading port and closable unleading port, conduit means for supplying liquid to said row of nozzles, means for controlling the temperature of the liquid supplied to said row of nozzles, including means for circulating said liquid through adjustable heat transfer means, means for controlling the rate of flow of the liquid through said conduit means, the method comprising the steps of:

supplying a liquid under pressure through sand row of nozzles to the interior of said vessel to set up a substantially circular flow about said longitudinal axis of the liquid and articles to be dyed,

heating said liquid to a first predetermined temperature,

supplying a dye material through said row of nozzles while maintaining the circular flow of the contents of said vessel,

heating the contents of said dye vessel to a second predetermined temperature that is higher than said first temperature by passing the liquid contents of said vessel through said heat transfer means,

maintaining the circular flow in said vessel until the dye material is exhausted,

cooling the contents of said vessel to a predetermined temperature by passing the liquid contents of said vessel through said heat transfer means, and subsequently

unloading the articles and liquid in said vessel through said unloading port.

3,880,584

USE AS CORROSION INHIBITORS:ACRIDINE PHOSPHORIC COMPOUNDS

Derek Redmore, Ballwin, Mo., assignor to Petrolite Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 173,296, Aug. 19, 1971, Pat. No. 3,775,057, which is a division of Ser. No. 801,856, Feb. 24, 1969, Pat. No. 3,673,196. This application Aug. 10, 1973, Ser. No. 387,293

Int. Cl. C23f *11/16, 11/00, 11/04*

U.S. Cl. 21—2.5 A **3 Claims**

1. A process of inhibiting corrosion of ferrous metals caused by contact with a corrosive medium which comprises contacting the metal with a corrosion inhibiting amount of a compound selected from the group consisting of diethyl acridine-9-phosphonate and acridine-9-phosphonic acid.

3,880,585

METHOD OF INHIBITING STRESS CRACKING

Daniel N. Hess, P.O. Box 413, Norris, Tenn. 37827, and Ramon A. Bannister, 1710 Atlantic Ave., Sullivan Island, S.C. 29482

Filed May 18, 1972, Ser. No. 254,452

Int. Cl. C23f *9/02, 11/00, 11/08*

U.S. Cl. 21—2.7 R **5 Claims**

1. A method of inhibiting stress cracking of stainless steel in a chloride-ion fluid environment comprising, contacting a stainless steel surface in a chloride-ion containing fluid environment with mercuric nitrate in an effective amount to inhibit stress cracking of said stainless steel surface.

3,880,586

APPARATUS FOR STERILIZING AMPOULES AND REJECT CONTROL SYSTEM THEREFOR

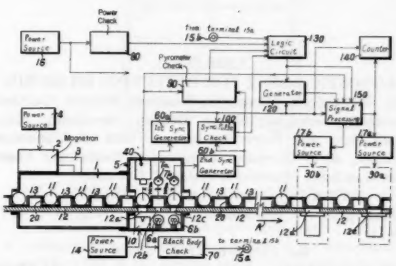
Teruo Murayama, Niiza; Mamoru Irizuki Kunitachi; Yuichi Morishita, Akikawa, both of Tokyo; Isamu Utsumi, Kyoto; Kanae Murakami, and Hiroichi Matsushita, both of Toyonaka, all of Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo and Tanabe Seiyaku Co., Ltd., Osaka, both of Japan

Filed Dec. 4, 1973, Ser. No. 421,676

Claims priority, application Japan, Dec. 7, 1972, 47-122880

Int. Cl. A61l *3/02;* **B07c** *5/34, 5/344*

U.S. Cl. 21—102 R **28 Claims**



1. Apparatus for sterlizing liquid filled ampoules comprising a microwave heating chamber, conveying means for moving said ampoules through said chamber, means for producing a temperature signal indicative of the temperature of each ampoule passed through said chamber, a check circuit means for comparing said temperature signal with reference signals which define an allowable temperature signal range and for generating a reject signal when said temperature signal is outside of the allowable temperature signal range, and an ampoule sorter means which is responsive to the reject signal for rejecting ampoules.

3,880,587

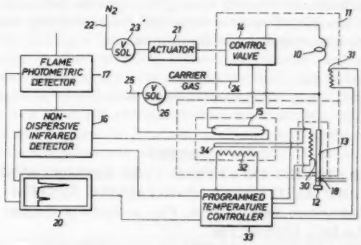
METHOD AND APPARATUS FOR TOTAL ANALYSIS OF HYDROCARBON SAMPLES

Julius J. Szakasits, Deer Park, and Alfred E. Krc, La Porte, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 1, 1974, Ser. No. 457,149

Int. Cl. G01n *31/08, 31/12*

U.S. Cl. 23—230 PC **7 Claims**



5. A method for analyzing a wide boiling point range sample to distinguish it from all other samples comprising:

heating the sample to at least 300 C to remove the volatiles from the sample;

passing the volatilized material through a GLC column;

oxidizing the effluent from the GLC column;

measuring the carbon content of the oxidized sample and recording the measurement with respect to time;

measuring the sulphur content of the oxidized sample and separately recording the measurement;

backflushing the GLC column to remove the remaining volatiles and non-volatilized material from the column and injection port;

increasing the injection port temperature to 700 C and adding oxygen during the backflushing to oxidize the removed non-volatilized material;

heating the volatiles and non-volatiles removed by backflushing to at least 930 C to oxidize the heated sample; and

repeating the carbon and sulphur measuring steps.

3,880,588

DIAGNOSTIC AGENT FOR DETECTING BILIRUBIN

Walter Rittersdorf, Mannheim-Waldhof; Werner Guthlein, Mannheim-Neckarau; Dieter Berger, Viernheim; Hans-Georg Rey, and Peter Rieckmann, both of Mannheim-Waldhof, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim-Waldhof, Germany

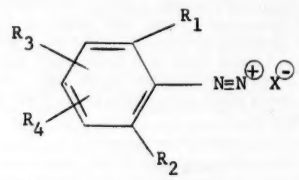
Filed July 24, 1973, Ser. No. 382,241

Claims priority, application Germany, Aug. 17, 1972, 2240471

Int. Cl. G01n *31/22, 33/16*

U.S. Cl. 23—253 TP **31 Claims**

1. Test strip for the detection of bilirubin in body fluids, which comprises an absorbent carrier containing a diazonium salt of the formula:



(I)

wherein

X is a stabilizing anion,

R and R , which may be the same or different, are halogen or lower alkyl or alkoxy and

R and R , which may be the same or different, are hydrogen, halogen, nitro, or lower alkyl or alkoxy;

the aromatic ring in formula (I) containing either (a) 1 to 3 halogen atoms or (b) one nitro group, but not both together; and an amount of an acid sufficient for a coupling reaction between bilirubin and said diazonium salt.

3,880,589

FLUID CIRCUIT INCLUDING TUBE RINSING SYSTEM AND BATH LEVEL MAINTAINING SYSTEM

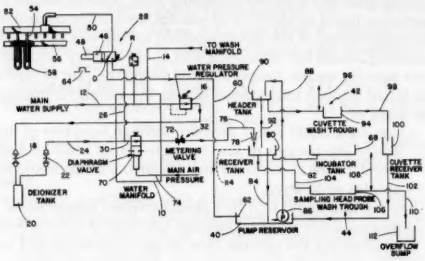
Alan Richardson Jones, Miami, Fla., assignor to Coulter Electronics Inc., Hialeah, Fla.

Filed Oct. 23, 1973, Ser. No. 408,850

Int. Cl. G01n *1/14;* **B08b** *1/02, 9/08*

U.S. Cl. 23—253 R **16 Claims**

1. In a system for rinsing tubes which are closed at one end and which are supported in a rack, and in which system there is provided at least one cannula and means for causing relative movement between the cannula and the rack to bring the at least one cannula into one of the tubes, the improvement comprising means connected to said cannula for causing rinsing fluid to flow through the cannula into the tube for a predetermined time sufficient to fill the tube with a desired amount of rinsing fluid said means thereafter draining said fluid by



siphon and gravity from the tube through said at least one cannula and a fluid drain conduit.

3,880,590

TEST STRIP FOR KETONE BODIES

Yasunao Ogawa, Ikeda, and Ukio Yonetani, Nara, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed June 21, 1974, Ser. No. 481,913

Claims priority, application Japan, Nov. 8, 1973, 48-125667

Int. Cl. G01n *31/22, 33/16;* **C09k** *3/00*

U.S. Cl. 23—253 TP **6 Claims**

1. A test strip for the detection of ketone bodies, comprising an absorbing material, a heavy metal salt and a nitroprusside salt.

3,880,591

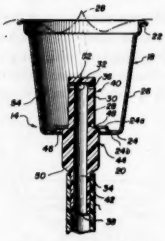
MOUTHPIECE FOR BREATH TESTING DEVICES

James E. Burroughs, Mount Prospect, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jan. 2, 1974, Ser. No. 430,286

Int. Cl. B01l *11/00*

U.S. Cl. 23—259 **16 Claims**

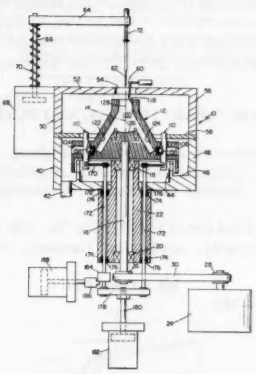


1. A mouthpiece stem member for a breath testing device, comprising a tubular wall closed at one end thereof, the tubular wall being open at the other end thereof to form a breath outlet of the stem member, an enlargement provided on the tubular wall outwardly thereof and spaced from the closed end, the stem member being adapted to support a mouthpiece cup member thereon in engagement with the enlargement and in a position surrounding the closed end in spaced relation thereto, and means defining at least one aperture in the tubular wall intermediate the enlargement and the closed end, the aperture forming a breath inlet of the stem member.

3,880,592
BLOOD ANALYSIS SYSTEM INCLUDING A PLASMA SEPARATOR

Thomas F. Kelley, Canton; Allan G. Dennison, Acton, and Anthony J. Waraksa, Burlington, all of Mass., assignors to Instrumentation Laboratory, Inc., Lexington, Mass.

Filed July 5, 1973, Ser. No. 376,719
Int. Cl. G01n *33/16;* **B04b** *1/00*
U.S. Cl. 23—259 **26 Claims**



1. A blood analysis system comprising a plasma analysis unit, a plasma separator, said plasma separator comprising a rotor mounted for rotation about a fixed axis, separation chamber structure and second chamber structure within said rotor, said rotor having a port through which blood to be processed may be introduced, said second chamber structure being adjacent said rotor axis and in communication with said port and said separation chamber structure being offset from said rotor axis, restriction structure between said separation chamber and said second chamber structure for retaining a cellular portion of the material in said separation chamber structure after separation while permitting a plasma portion to flow from said separation chamber structure into said second chamber structure, discharge port structure located adjacent said lower portion of said separation chamber structure on the side thereof remote from said rotor axis, valve structure for normally closing said discharge port structure, a first conduit for supplying whole blood to said plasma separator through said second port, probe structure for removing said plasma portion from said second chamber structure, and a second conduit connected to said probe structure for transferring plasma from said plasma separator to said analysis unit for analysis.

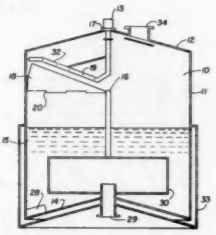
3,880,593
CRYSTALLIZATION APPARATUS

Georges Windal, Roubaix, France, assignor to Five Lille-Cail, Paris, France

Filed Mar. 29, 1973, Ser. No. 345,993
Claims priority, application France, Mar. 29, 1972, 72.10951
Int. Cl. B01d *9/00*
U.S. Cl. 23—273 R **7 Claims**

1. A crystallization apparatus for crystallizing the solute of a solution by evaporating the solvent of the solution in a continuous operation, comprising

1. a closed cylindrical tank having a vertical axis, the tank having an upper and a lower portion,
2. radially extending dividing walls in the lower portion of the tank defining therebetween a plurality of compartments ranging from a first compartment upstream to an output compartment downstream,
   a. all the walls, except the wall between the output compartment and the first compartment upstream thereof, having port means therein permitting communication between the compartments,
3. a feeding means for feeding an undersaturated solution of the solute into successive ones of the compartments,

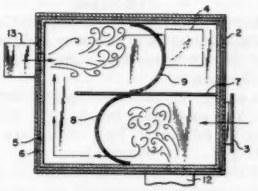


   a. the feeding means being arranged in the upper portion of the tank for rotation about the vertical axis to sweep over the successive compartments, and
4. means for controlling the amount of the undersaturated solution fed by the feeding means into each of the successive compartments.

3,880,594
FUME INCINERATOR

Alexander Shaw, Box 45, Braddock Heights, Md. 21714

Filed Sept. 28, 1972, Ser. No. 293,041
Int. Cl. F23g *7/06;* **F23c** *9/04*
U.S. Cl. 23—277 C **7 Claims**



1. A fume incinerator for burning exhaust gases comprising a housing, primary and secondary combustion chambers located in said housing in fluid communication with each other, a baffle having a semicircular configuration in cross section mounted in and extending transversely across each of said combustion chambers so as to block the fluid path in each said combustion chamber thereby directing the gases therein to move in a generally circular path in cross section, means for permitting the gases to flow past each said baffle, and primary and secondary burners respectively mounted in said primary and secondary combustion chambers.

3,880,595
GAS GENERATING COMPOSITIONS AND APPARATUS

Hubert G. Timmerman, 1809 Faymont Ave., Manhattan Beach, Calif. 90266

Division of Ser. No. 261,041, June 8, 1972, Pat. No. 3,785,149. This application Aug. 22, 1973, Ser. No. 390,435
Int. Cl. B01j *7/00;* **C06d** *5/06*
U.S. Cl. 23—281 **4 Claims**

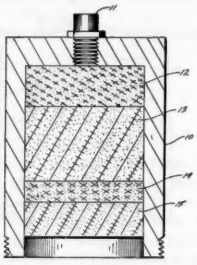
1. A gas generator for inflating a bag comprising:

a pressure resistant vessel having a closed end and an open end;

a body of compacted powders in the vessel, said body comprising

a first portion consisting essentially of an intimate mixture of citric acid in the range of from about 25 to 37 percent by weight and the balance selected from the group consisting of potassium chlorate, potassium perchlorate, sodium chlorate, and sodium perchlorate, and

a second portion immediately adjacent to the first portion comprising an intimate mixture of up to about 60 percent



by weight of potassium chlorate and the balance selected from the group consisting of magnesium carbonate, manganese carbonate, zinc carbonate, barium carbonate, calcium carbonate, potassium bicarbonate, hydrated magnesium carbonate, hydrated zirconium oxide, borax, and barium oxide octahydrate; and

means at the closed end of the vessel for raising a portion of the compacted powders to its autoignition temperature.

3,880,596

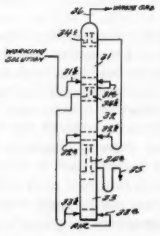
APPARATUS FOR THE PRODUCTION OF HYDROGEN PEROXIDE

Martin Liebert, Frankfurt; Heinz Delle, and Gerhard Käbisch, both of Rheinfelden, all of Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler, Frankfurt (Main), Germany

Division of Ser. No. 183,561, Sept. 24, 1971, Pat. No. 3,752,885. This application Dec. 6, 1972. Ser. No. 312,516

Int. Cl. B01f *3/04;* **B01j** *1/00;* **C01b** *15/02*

U.S. Cl. 23—283 **6 Claims**



1. In an apparatus for forming hydrogen peroxide by the cyclic anthraquinone process employing a working solution comprising a column for hydrogenating the working solution and a separate column for oxidizing the working solution and wherein liquid flows from the bottom to the top of said separate column, the improvement comprising column means for oxidizing the working solution made of a plurality of vertically disposed, vertically aligned column sections including a first lower section and a second upper section, conduit means for introducing an oxygen containing gas to the bottom portion of said first section, conduit means for conducting working solution lowest in hydroquinone concentration and separated from the top portion of said second section into the bottom portion of said first section, cyclone means in the top portion of said first section for separating gas and working solution, conduit means connected to the top of said first section for removing the separated working solution, extractor means for removing hydrogen peroxide from the working solution, conduit means for returning the working solution to the hydrogenation means of the cyclic process, conduit means for leading the gas separated from the top of said first section to the bottom of said second section, conduit means for introducing working solution to the bottom of the second section, cyclone means in the top portion of said second section for separating gas and working solution and conduit means for removing gas from the top portion of said second section.

3,880,597

DEVICE FOR SEPARATING SO_2 AND DUST FROM FLUE GASES

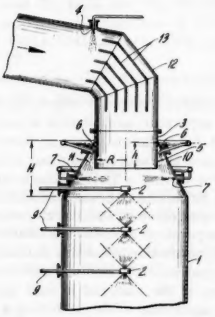
Klaus Goldschmidt, and Gerhard Hausberg, both of Essen, Germany, assignors to Steag Aktiengesellschaft, Essen and Gottfried Bischoff Bau Kompl., Gasreinigungs, both of, Germany

Filed Oct. 12, 1972, Ser. No. 296,774

Claims priority, application Germany, Oct. 12, 1971, 2150835

Int. Cl. B01j *1/14*

U.S. Cl. 23—283 **2 Claims**



1. A device for separating SO_2 and dust from flue gases, particularly a spray tower, comprising a vertically extending tower, an upper inlet for contaminated gas in the form of a feed tube extending into the tower from above and terminating in an intake sleeve located within the top of said tower, an injection device for injecting a calcareous additive into the contaminated gas stream located in said feed tube, means for supplying calcareous additive to said injection device, a plurality of main nozzles for injecting wash water into the gas stream which are arranged along the tower axis one above the other, a plurality of first additional nozzles located in said tower in an annular zone around and close to said intake sleeve and arranged to spray wash water downwardlly so as to provide for a continuous rinsing of the tower walls and, at the same time, to produce below the lower border of the intake sleeve a screen of fine wash water particles surrounding the incoming stream and separating the same from the tower walls, and a plurality of second additional nozzles located in an annular zone below the lower border of said intake sleeve and arranged to spray wash water in radial inward direction so as to support the action of said first additional nozzles, said spray tower including a frustoconical roof widening in a downward direction and which surrounds and embraces, by its upper border, said intake sleeve, said device for injecting the additive being arranged to discharge vertically into said intake sleeve, and said first additional nozzles are located in the space between said roof and said intake sleeve, said second additional nozzles being located directly below said intake

sleeve adjacent the bottom of said roof, the height of said frustoconical cover being preferably equal to the height of said intake sleeve within the cover, plus approximately the radius of said sleeve.

3,880,598

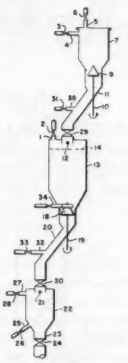
RESIDUAL OIL HYDRODESULFURIZATION APPARATUS

Lambertus J. van der Toorn, and Heinz Voetter, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Division of Ser. No. 96,920, Dec. 10, 1970, Pat. No. 3,730,880. This application Dec. 22, 1972, Ser. No. 317,574

Int. Cl. B01j *9/04*

U.S. Cl. 23—289 **4 Claims**



1. An apparatus suitable for carrying out a continuous process for hydrodesulfurizing residual hydrocarbon oils in the presence of hydrogen substantially completely dissolved in a liquid phase through a substantially fixed catalyst bed wherein catalyst is periodically introduced at the top of said catalyst bed and spent catalyst is periodically withdrawn from the bottom thereof, which comprises:

a. a high-pressure inlet vessel for containing fresh catalyst, said inlet vessel having at least one inlet for fresh catalyst and liquid, means for pressuring and depressuring, and at least one outlet for discharging fresh catalyst;

b. a high-pressure reaction vessel having a residual oil feed inlet, a reaction product outlet, a catalyst inlet and a catalyst outlet and containing a substantially fixed bed of catalyst;

c. a high-pressure discharge vessel for receiving spent catalyst from said reaction vessel, said discharge vessel having at least one inlet for spent catalyst and liquid, means for pressuring and depressuring and at least one outlet for discharging spent catalyst and liquid;

d. a conduit provided with a solid-handling valve connecting the vessels described in (a) and (b); and

e. a conduit provided with a solid-handling valve connecting the vessel described in (b) and (c), a high-pressure valve between said solid-handling valve and said discharge vessel described in (c) and an inlet for valve-flushing liquid connected to the conduit between said valves, said liquid inlet being provided with a high-pressure valve.

3,880,599

CONTROL OF ROD DIAMETER RESPONSIVE TO A PLURALITY OF CORRECTED PARAMETERS

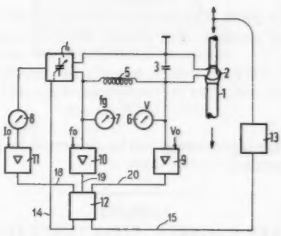
Wolfgang Keller, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 19, 1973, Ser. No. 342,457

Claims priority, application Germany, Apr. 26, 1972, 2220519

Int. Cl. B01j *17/00, 17/20*

U.S. Cl. 23—301 SP **13 Claims**



1. A method for the control of a floating zone melting process in which a zone in a semiconductor rod is heated inductively by means of r.f. energy supplied to a coil surrounding the rod, and including drive means for moving the heated zone longitudinally through the rod, comprising the steps of sensing the frequency of said r.f. generator, sensing the current drawn by said r.f. generator, sensing the voltage drop across said coil, comparing said sensed frequency, current and voltage with a reference frequency, current and voltage respectively to yield resulting parameters representing the respective errors between said frequencies, currents and voltages, and controlling with said resulting parameters the frequency of said generator and the relative velocity between upper and lower rod holder of said drive means for producing a rod having a predetermined diameter.

3,880,600

SELF-LUBRICATING SLIDE ELEMENT

Josef Zboril, Fislisbach, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Apr. 10, 1973, Ser. No. 349,861

Claims priority, application Switzerland, Apr. 20, 1972, 5773/72

Int. Cl. B22f *3/00*

U.S. Cl. 29—182.5 **14 Claims**

14. A self-lubricating slide component as defined in claim 1 containing 8% by weight of graphite, 70% by weight, of iron subjected to nitriding and the remainder being nickel and copper.

3,880,601

METHOD OF PREPARING A CONTINUOUSLY CAST INGOT FOR ROLLING OR THE LIKE

Klaus Wünnenberg, and Josef Kleinen, both of Duisburg, Germany, assignors to Mannesmann AG, Dusseldorf, Germany

Filed Dec. 20, 1973, Ser. No. 426,659

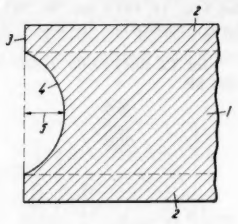
Claims priority, application Germany, Dec. 19, 1972, 2262978

Int. Cl. B21b *1/08*

U.S. Cl. 29—187 **6 Claims**

4. An ingot as an intermediate product to be rolled and having been produced by continuous casting and by cutting a

length of the casting and having an arch-shaped recess in at least one of its planar end faces, the recess extending into that



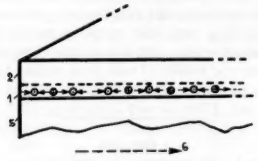
portion of the ingot, which will be deformed by rolling more than the remainder of the ingot.

3,880,602

THIN LAYER MAGNETIC STRUCTURES FOR BINARY INFORMATION STORES

Jean Valin, Les Essarts le Roi, and Jean Claude Bruyere, Sayssinet, both of France, assignors to Centre National de la Recherche Scientifique, Paris and Compagnie Internationale pour l'Informatique, Louveciennes, both of, France

Continuation of Ser. No. 746,090, July 19, 1968, abandoned. This application Jan. 21, 1971, Ser. No. 108,587
Claims priority, application France, July 7, 1967, 116154
Int. Cl. H01f *10/02*
U.S. Cl. 29—195 7 Claims



1. A thin layer magnetic structure for use as a binary information store comprising:

a non-magnetic base;

a laminated magnetic structure supported by said base and including one lamina of a material of antiferromagnetic character, the magnetic spins of the crystallites of said material being randomly organized and another lamina of ferromagnetic material of uniaxial anisotropy intimately overlying said one lamina.

3,880,603

LAMINATED MAGNETIC MATERIAL

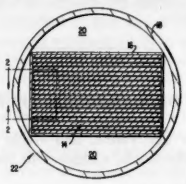
Clayton N. Whetsone, 1100 Penn Central Blvd., Pittsburgh, Pa. 15235

Continuation-in-part of Ser. No. 79,864, Oct. 12, 1970, Pat. No. 3,756,788. This application May 3, 1973, Ser. No. 356,893
Int. Cl. B32b *15/04*
U.S. Cl. 29—195 30 Claims

1. A laminated magnetically soft material comprising:

a plurality of layers of substantially stress-free magnetically soft metal;

a least one continuous layer of an inorganic electrically insulative material having a resistivity of more than about 10^{-4} ohm-cm located between adjacent layers of said



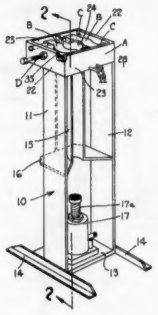
substantially stress-free magnetically soft metal and heat-bonded thereto.

3,880,604

PRESS FOR REMOVING BEARINGS

Wallace H. Hawkins, Rt. 7, Buncombe Rd., Greenville, S.C. 29609

Filed Jan. 14, 1974, Ser. No. 433,214
Int. Cl. B23p *11/02, 19/02*
U.S. Cl. 29—252 3 Claims



1. In a press for removing bearings from the rear axles of an automobile and the like having bearings carried inside and closely adjacent mounting housings, wherein a vertical frame carries a ram assembly adjacent a lower portion thereof for exerting a pushing force upon an end of axle carried vertically by said frame remote from the bearing, the improvement comprising:

an open topped housing carried by said frame having a base with an opening in a medial portion thereof for receiving an axle carried adjacent the top of the frame;

a pair of opposed jaws carried within said open topped housing;

a pair of spaced guides carrying each of said jaws therebetween mounted upon said open topped housing; and

opposed threaded elements threadably carried by said open topped housing bearing against respective jaws between respective guides;

whereby said jaws are urged inwardly between said bearings and said mounting housings exerting a separating force therebetween.

3,880,605

MANUFACTURE GAS PROPELLED DISPENSERS

Milo E. Webster, Braintree, Mass., assignor to The Gillette Company, Boston, Mass.

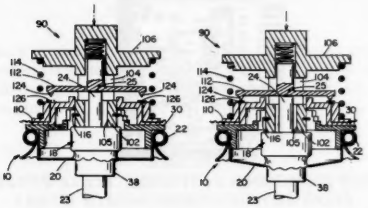
Filed July 16, 1973, Ser. No. 379,632
Int. Cl. B23q *15/02*
U.S. Cl. 29—407 6 Claims

1. A method for manufacturing a gas propelled dispenser having a valve with a stem accurately placed at a desired

position with respect to the cannister thereof comprising the steps

assembling a dispenser with a cannister having a reference structure, and a valve with a reference structure and with a seat structure joined to said cannister by a plastically deformable structure requiring for deformation application of a force larger than that required for opening said valve, said dispenser being initially assembled with said valve stem displaced from said desired position,

without opening said valve, moving a gage into engagement with one of said reference structures, said gage including a contacting portion for engaging with said one of said reference structures and a sensor connected to signal



when the other of said reference structures assumes a position defined relative to said contacting portion, the displacement between said contacting portion and said defined position being equal to that between said reference structures when said stem is in said desired position with respect to said cannister,

applying sufficient force to said valve seat structure while maintaining said gage in engagement with said one reference structure to plastically deform said deformable structure without opening said valve, and

generating a signal when said other of said reference structures assumes said defined position and applying said signal to terminate the application of force to said valve seat structure.

3,880,606

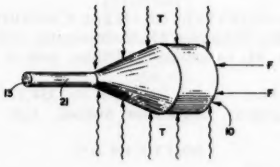
METHOD OF PRODUCING A MASS UNBALANCED SPHERICAL GYROSCOPE ROTOR

Joseph C. Boltinghouse, Whittier, and Alfred G. Gross, Jr., Santa Ana, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 263,025, June 15, 1972, abandoned. This application Nov. 23, 1973, Ser. No. 418,630

Int. Cl. B23p *17/00*

U.S. Cl. 29—417 **9 Claims**



1. A method for producing a mass unbalanced spherical gyroscope rotor comprising in combination the steps of:

forming a billet of metal into a right circular cylinder having a diameter greater than the diameter of the finished gyroscope rotor;

drilling at least one hole through said cylindrical billet along an axis parallel to the cylinder axis and displaced therefrom;

inserting wire of a density different than the metal of said billet into the drilled hole;

extruding said billet of metal along its cylindrical axis to form a rod having a diameter greater than the diameter of the gyroscope rotor;

cutting said rod into sections with the lengths of the sections being greater than the diameter of the gyroscope rotor; and

lapping each section into a spherical rotor.

3,880,607

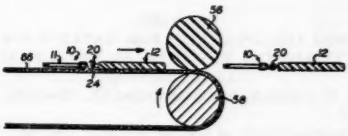
ASSEMBLY METHOD FOR A FOB-KEY-RING ASSEMBLY

Kermit Wolpin, Atlantic Beach, N.Y., assignor to Hit Sales Corporation, New York, N.Y.

Division of Ser. No. 236,944, March 22, 1972, Pat. No. 3,782,150. This application Sept. 14, 1973, Ser. No. 397,379

Int. Cl. B23p *11/00*

U.S. Cl. 29—439 **4 Claims**



1. A method of assembling a fob to a key-ring comprising the steps of: forming a linearly extending attaching bar on an edge of the fob extending along the fob edge at a spaced distance therefrom; forming an elongate sleeve of a length equal to or shorter than the length of said attaching bar on said fob, said sleeve formed with a slit extending longitudinally thereof, with said sleeve initially formed open along said slit; securing said sleeve to said key-ring; positioning said attaching bar in said open sleeve; positioning said fob, key-ring and sleeve on a belt trained to pass between two rollers spaced apart a distance equal to or less than the desired cross-section of said sleeve when closed; and passing said fob key-ring and sleeve on said belt between said two rollers to close said sleeve about said rod to join the fob to the key-ring.

3,880,608

ELECTRICAL CONTACT MATERIALS CONTAINING SILVER CADMIUM OXIDE

Fredrick O. Haarbye, Indianapolis, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

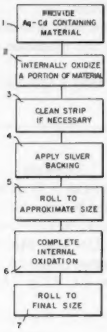
Division of Ser. No. 17,456, March 9, 1970, Pat. No. 3,666,428, which is a continuation-in-part of Ser. No. 722,956, April 22, 1968, abandoned. This application Feb. 17, 1972, Ser. No. 227,300

Int. Cl. B23k *31/02*

U.S. Cl. 228—124 **11 Claims**

1. In a method of making an electrical contact material of the Ag-CdO type including the steps of forming a body containing an alloy of Ag-Cd, oxidizing a surface of the body to form a zone including Ag-CdO at the surface of the body, the zone being of a relatively thin thickness in relation to the total thickness of the body, joining a wettable and thermally and

electrically conductive material to the Ag-CdO containing zone of the body to form a mass, and internally oxidizing the


PROVIDE Ag-Cd CONTAINING MATERIAL
INTERNALLY OXIDIZE A PORTION OF MATERIAL
CLEAN STRIP IF NECESSARY
APPLY SILVER BACKING
ROLL TO APPROXIMATE SIZE
COMPLETE INTERNAL OXIDATION
ROLL TO FINAL SIZE

body to the extent necessary to form a Ag-CdO type material suitable for use as an electrical contact material.

3,880,609

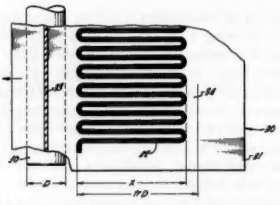
METHOD AND APPARATUS FOR MANUFACTURING CYLINDRICAL RESISTORS BY THICK-FILM SILK-SCREENING

Richard E. Caddock, 640 Sandalwood Ct., Riverside, Calif. 92507

Continuation-in-part of Ser. No. 315,018, Dec. 14, 1972, abandoned. This application Dec. 14, 1973, Ser. No. 424,810

Int. Cl. B44d *1/18*; **B41m** *1/12*; **H01c** *3/02*

U.S. Cl. 29—620 **30 Claims**



1. A method of manufacturing silk-screened film-type cylindrical resistors, which comprises:

a. providing an elongated cylindrical substrate,

b. providing a silk screen incorporating a pervious area which corresponds to the resistive film pattern which it is desired to provide adherently on the exterior cylindrical surface of said substrate,

c. causing one dimension of said pervious area to be substantially less than the circumference of said surface,

d. moving said silk screen and said substrate relative to each other, in a direction parallel to said one dimension, and simultaneously effecting rolling contact between said silk screen and said surface,

e. continuing said moving step for a distance at least equal to said one dimension, until all of said pervious area has engaged said surface,

f. disengaging said substrate from said silk screen without effecting any overlapping of the film pattern on said surface, and

g. providing termination means at the ends of said cylinder and in electrical contact with opposite end portions of the region which was screened with said film pattern.

3,880,610

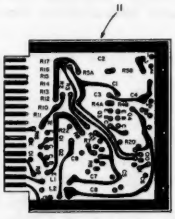
UNIVERSAL FUNCTION MODULE

Lennart E. Long, Waltham, Mass., assignor to The United States of America as represented by the Secretary of the Department of Transportation, Washington, D.C.

Filed Dec. 14, 1973, Ser. No. 424,853

Int. Cl. H05k *3/00*

U.S. Cl. 29—625 **4 Claims**



1. The method of fabricating a universal circuit board comprising the steps of:

selecting a group of common essential circuit configurations,

arranging said circuits to develop maximum symmetry between circuits,

drawing a circuit layout corresponding to all of said circuits,

preparing a circuit board in accordance with said layout.

3,880,611

ARTIFICIAL FIREPLACE LOGS AND METHOD OF PRODUCING

Alexander C. H. Weiss, Beav-O-Rama Pk., Rt. 1, Fayetteville, Ark. 72701

Filed Feb. 5, 1973, Ser. No. 329,386

Int. Cl. C10l *5/00*, *5/36*

U.S. Cl. 44—1 E **6 Claims**

1. The method of producing an artificial fireplace log comprising the steps of mixing unrefined sawdust and defibered paper in an approximate ratio of 5:1 by weight in water, vacuum depositing the mixture of sawdust and defibered paper onto a felting screen while agitating the mixture and building up on the screen a tubular artificial log body, removing the log body from the felting screen, and then air drying the log body thus formed.

3,880,612

STABILIZATION OF METAL CARBONYLS

Jarl Olle Börje Östergren, 45, Styrmansgatan, and Kurt Hans Reisinger, 81, Gotgatang c/o Dahlen, both of Stockholm, Sweden

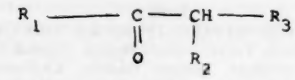
Filed Apr. 24, 1973, Ser. No. 354,131

Claims priority, application Sweden, Apr. 25, 1972, 5416/72

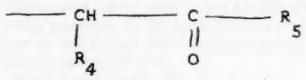
Int. Cl. C10l *1/32*

U.S. Cl. 44—51 **4 Claims**

1. A process for stabilizing a solution of carbonyls of metals of Group VIII of the periodic system in liquid hydrocarbons which comprises dissolving in said solution stabilizing amounts of one or more aluminum-containing organic compounds, the aluminum in said aluminum-containing organic compound being directly bonded to carbon atoms, oxygen atoms or both, and said aluminum-containing organic compound being the reaction product of at least one aluminum alkoxide and one or more compounds having the formula:



wherein R_1 is hydrogen, alkyl having up to 8 carbon atoms, aryl having up to 10 carbon atoms, aralkyl having up to 10 carbon atoms, alkoxy having up to 8 carbon atoms, aryloxy having up to 10 carbon atoms, aralkoxy having up to 10 carbon atoms, or a group of the formula:



and each of the groups R_2, R_3, R_4 and R_5, independently of each other, is hydrogen, alkyl having up to 8 carbon atoms, aryl having up to 10 carbon atoms or aralkyl having up to 10 carbon atoms.

3,880,613

HIGHER ALKYL TRIMETHYL AMMONIUM SALT LIQUID HYDROCARBON COMPOSITIONS

Alexis A. Oswald, 1809 Sunny Slope Dr., Mountainside, N.J. 07092; Jack Ryer, 61 Jensen St., East Brunswick, N.J. 08816, and Raam R. Mohan, 112 Oakland St., Berkeley Heights, N.J. 07922

Filed Feb. 7, 1972, Ser. No. 224,341

Int. Cl. C10l *1/26*

U.S. Cl. 44—62 **19 Claims**

1. A liquid hyrocarbon composition containing a surface active, water soluble, saturated open chain, higher alkyl trimethyl ammonium salt, said alkyl group containing a minimum of eight carbon atoms in amounts sufficient to increase its resistance to emulsion formation and/or microbial degradation.

3,880,614

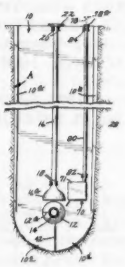
GAS MIGRATION SHIELD

James A. Donaldson, Box 465, Dodge Center, Minn. 55927

Filed Dec. 14, 1973, Ser. No. 424,846

Int. Cl. F17d *3/04*

U.S. Cl. 48—192 **15 Claims**



1. A barrier for preventing the migration of gas along the exterior of a pipe positioned in a trench, said barrier comprising:

a. a gas impervious shield extending from the bottom to the top of the trench and between the side walls thereof;

b. said shield having a hole formed therein for receiving the pipe;

c. said shield having a cut formed therein extending from said hole to an outer edge of said shield to permit the entry of the pipe into said hole;

d. flap means for sealing said cut after the pipe is positioned in said hole;

e. a collar secured to said shield around said hole, said collar having a cut formed therein extending through one side thereof to enable said collar to be initially engaged around the pipe so as to provide a seal between the pipe and said shield; and

f. seal means for securing said flap means and for joining said cut in said collar whereby a gas-tight shield is formed completely around the pipe.

3,880,615

PROCESS FOR REGENERATING ABSORBENT SOLUTIONS USED TO PURIFY GASES

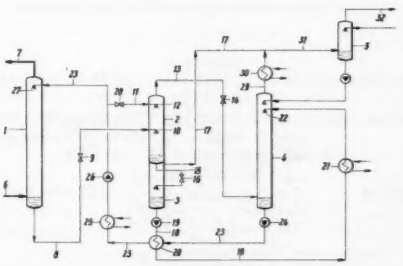
Gerhard Grünewald, Mainz-Bretzenheim, and Gerhard Hochgesand, Neu-Isenburg, both of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed May 16, 1973, Ser. No. 360,855

Claims priority, application Germany, May 30, 1972, 2226215

Int. Cl. B01d *53/14*

U.S. Cl. 55—44 **3 Claims**



1. Process for regenerating fully a laden absorbent solution produced when acid components are scrubbed at ambient temperatures from natural gas or commercial synthesis gases and fuel gases under pressure with a physical absorbent at ambient temperatures, which comprises subjecting said laden solution to a pressure relief in a plurality of stages and stripping the pressure-relieved solution in a regenerating zone with a gas, said stripping gas being formed by a preliminary pressure relief of the laden solution to a medium pressure between the absorption pressure and ambient pressure, and scrubbing said stripping gas before entering the regenerating zone with a branch stream of fully regenerated absorbent.

3,880,616

RESPIRATORY SUPPORT SYSTEM

William P. Myers, and Robert L. Johnson, both of Davenport, Iowa, assignors to The Bendix Corporation, Davenport, Iowa

Filed Nov. 19, 1973, Ser. No. 416,908

Int. Cl. B01d *53/04*

U.S. Cl. 55—62 **11 Claims**

1. In an isothermal process for separating a fluid mixture by selectively adsorbing one component in a first zone while desorbing the one component in a second zone, the improvement comprising:

providing a first bed of selective adsorbent material with a first entrance port and a first exit port;

providing a second bed of selective adsorbent material with a second entrance port and a second exit port;

connecting the first entrance port and the second entrance port to a reservoir through a first conduit;

connecting the first exit port to the second exit port through a second conduit, a third conduit and a fourth conduit;

supplying said reservoir with said fluid mixture under pressure through a supply conduit;

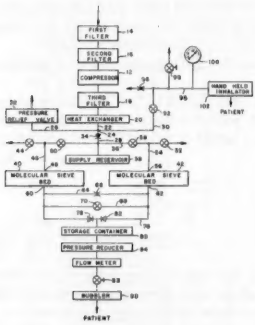
preventing said fluid mixture under pressure from flowing out of said reservoir through the supply conduit;

connecting said supply conduit to a relief valve to limit pressure of said fluid mixture;

introducing said fluid mixture in said reservoir to said first entrance port, said fluid mixture flowing through the first bed of selective adsorbent material where one component is retained while an unadsorbed product effluent is discharged through the first exit port into the second conduit, the third conduit, and the fourth conduit;

restricting the flow of the unadsorbed product effluent through the second conduit to a fixed amount of the total volume of the unadsorbed product effluent to permit flow through the second exit into the second bed of selective adsorbent material where any of said one component retained therein is carried through the second entrance port into the atmosphere;

preventing said unadsorbed product effluent from flowing in said third conduit while said fluid mixture is communicated to the first bed of selective adsorbent material;



allowing the remainder of said total volume of the unadsorbed product effluent to flow through a one-way control into a storage container;

interrupting the flow of the fluid mixture communicated to said first bed of selective adsorbent material through the first entrance port and the flow of the unadsorbed product effluent communicated through the second entrance port to the atmosphere;

permitting the unadsorbed product effluent to freely flow through said third conduit until the pressure in the first and second beds of selective adsorbent material are substantially equal;

allowing said fluid mixture under pressure introduced into the first conduit to be communicated through said second entrance port to the second bed of selective adsorbent material to retain said one component therein while allowing an unadsorbed product effluent to flow through the second exit port to the second conduit, the third conduit, and the fourth conduit for removing the retained one component from the first bed of selective adsorbent material and retention in said storage container; and

cycling the fluid mixture under pressure between the second bed of selective adsorbent materials and the first bed of selective adsorbent material when the effective retention of the one component in either bed is reached.

3,880,617

PROCESS FOR PREPARING PURIFIED COKE OVEN GAS

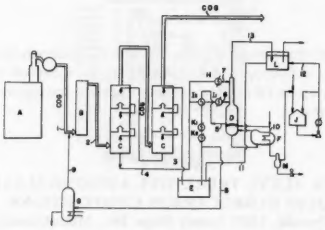
Tatsuo Shibuya, Tokyo; Takashi Hosoya, Sagamihara; Fumio Sudo, Yokohama; Tsutomu Hoshino, Kitakushu; Sunao Yamada, Kitakushu, and Hifumi Hiraoka, Kitakushu, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd. and Mitsubishi Kakoki Kaisha Ltd., both of Tokyo, Japan

Filed May 28, 1974, Ser. No. 474,072

Claims priority, application Japan, May 26, 1973, 48-58874; May 28, 1973, 48-59573

Int. Cl. B01d *53/14*

U.S. Cl. 55—68 **3 Claims**



1. In a process for preparing a purified coke oven gas which comprises contacting counter-currently a coke oven gas with an absorbent solution of ammonia in an absorber having a plurality of absorbing stages, to absorb an acidic gas in the coke oven gas into the absorbent solution,

heating the absorbent solution containing the stripping gas discharged from the absorber with steam in a deacid tower to separate substantial amounts of the acidic gas from the absorbent solution and recycling the reproduced absorbent solution to the absorber,

the improvement wherein the absorbent solution discharged from the absorber is divided and fed to the top and middle parts of the stripping tower in a ratio of more than 0.05 by weight of the absorbent solution fed to the top to 1 by weight of the absorbent solution fed to the middle part, and the temperature of the absorbent solution fed to the top is maintained at lower than 40°C.

3,880,618

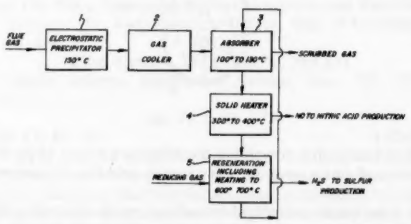
SIMULTANEOUSLY REMOVING SULFUR AND NITROGEN OXIDES FROM GASES

Donald H. McCrea, 1532 Tonopah Ave., Pittsburgh, Pa. 15213, and John G. Myers, 1600 Cumberland St., Pittsburgh, Pa. 15205

Filed Mar. 2, 1973, Ser. No. 337,342

Int. Cl. B01d *53/04*

U.S. Cl. 55—68 **4 Claims**



1. A process for removing nitrogen oxides, selected from the group consisting of NO and NO_2, from a gas which contains at least 200 ppm of sulfur dioxide which comprises contacting said gas at a temperature of about 75°–150°C. with a

solid absorbent selected from the group consisting of alkalized alumina, sodium, and potassium carbonate or oxide, recovering nitrogen oxides from said absorbent by heating it to a temperature of 300°-400°C and thereafter regenerating said absorbent to a temperature of 600°-700°C in the presence of a reducing gas whereby sulfur compounds are removed from the absorbent.

3,880,619
SOLID SORBENT FOR TRAPPING IODINE

Donald M. Richardson, and Carlos E. Bamberger, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Sept. 5, 1974, Ser. No. 503,238
Int. Cl. B01d *53/00*
U.S. Cl. 55—71 **6 Claims**

1. In a method of removing iodine from a fluid wherein said fluid contacts a solid sorbent for sorbing iodine from said fluid, the improvement comprising using lead monoxide as said solid sorbent.

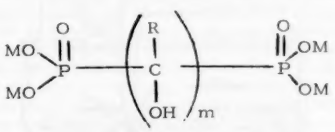
3,880,620
METHOD FOR SCRUBBING GASES DERIVED FROM BLAST FURNACES

K. Robert Lange, Huntingdon Valley, and Yuan Tsun Hsu, Cornwells Heights, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed June 19, 1974, Ser. No. 480,654
Int. Cl. B01d *47/02*
U.S. Cl. 55—72 **6 Claims**

1. A method of scrubbing flue gases from a blast furnace for iron production which comprises treating said gases with an aqueous medium contains from about 0.5 to 300 parts per million of a composition comprising on a weight ratio basis from about 1:10 to 10:1 of:

i an organo-phosphonate having the formula:



wherein *m* is an integer of from 1 to 10, R is hydrogen or an alkyl of from 1 to 4 carbon atoms, and M is hydrogen or a watersoluble cation, and

ii a water-soluble acrylic acid polymer having an average number molecular weight of from about 750 to about 10,000 or water-soluble salt thereof.

3,880,621
METHOD FOR PREVENTING COKE OBSTRUCTIONS IN PYROLYSIS PLANTS

Hans Schneider, near Heide, Holst; Richard Gustav Hussner, Heide, Holst, and Raimund Erhard Fischer, Hemmingstedt, all of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

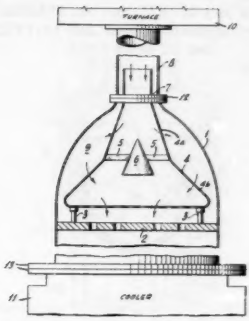
Division of Ser. No. 94,734, Dec. 3, 1970, Pat. No. 3,771,638.
This application June 11, 1973, Ser. No. 369,048
Int. Cl. B01d *46/00*
U.S. Cl. 55—97 **5 Claims**

1. The method of preventing coke obstruction in a system which includes a pyrolysis furnace for hydrocarbons, a connecting conduit, and a cooler, said furnace being in sequence with the conduit and cooler, the method comprising,

a. passing the effluent of the pyrolysis furnace at coke forming conditions ir to a sieve cage having a bottom wall,

b. guiding the effluent out of the sieve cage with a deflector,

c. passing the effluent back into the sieve cage, and

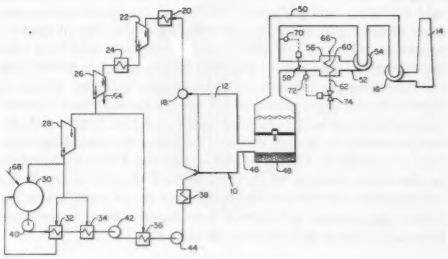


d. passing the effluent back out of the sieve cage for effecting occlusion of coke by filteration in said sieve cage prior to passing said effluent through said cooler.

3,880,622
STACK GAS REHEATING FOR FLUE GAS SCRUBBING SYSTEM

Brooks Mason Howell, East Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 23, 1973, Ser. No. 418,702
Int. Cl. B01d *47/00*
U.S. Cl. 55—222 **8 Claims**



1. In a system for drying moist process gases by the application of heat, the combination comprising:

a. a conductor;

b. means for flowing moist process gases through said conductor;

c. a gas recirculation line operatively connected to said conductor for extracting at least part of the gases flowing therethrough, the inlet end of said gas recirculation line communicating with said conductor at a downstream position in the gas flow sense therealong and the outlet end thereof communicating with said conductor at an upstream location therein;

d. means for passing the extracted gases through said gas recirculation line from the inlet to the outlet thereof;

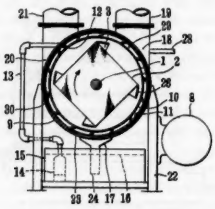
e. a heater operatively disposed in said gas recirculation line for heating the gases flowing therethrough; and

f. means for discharging the gases heated in said gas recirculation line in mixed relation with the moist process gases in said conductor whereby the same are dried by the transfer of heat from said heated gases.

3,880,623
DUST AND MIST COLLECTOR

Mitsugu Aoyama, Gifu-ken, Japan, assignor to Nihon Jescoal Industry Co., Ltd., Tokyo and Mitsugu Aoynama, Gifu-ken, both of, Japan

Filed July 6, 1973, Ser. No. 377,098
Claims priority, application Japan, July 11, 1972, 47-69775
Int. Cl. B01d *47/08*
U.S. Cl. 55—230 **5 Claims**



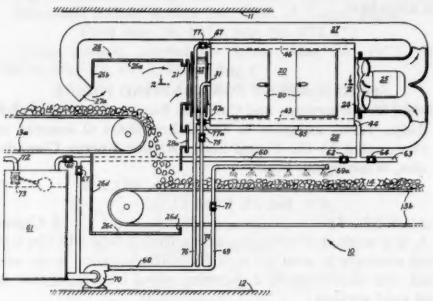
1. A dust and mist collector comprising a cylindrical casing, gas inlet means admitting inlet gas to one longitudinal end of said casing, gas outlet means for outlet gas at the other longitudinal end of said casing, a fluid inlet means and a drain outlet means in said casing, latticed chambers arranged in fixed positions at the inner cylindrical wall of said casing, said latticed chambers being defined by two concentrically disposed latticed cylinders, a shaft concentrically and rotatably mounted in said cylindrical casing, a polygonal rotor carried by said shaft and rotatable within said casing, resistance plates connecting said latticed cylinders and slanted in a direction corresponding to the rotational direction of said rotor, said polygonal rotor having outer vertexes disposed adjacent to said latticed chambers without contacting the latter, said rotor being provided with pressure receiving plates extending along said vertexes, said polygonal rotor and the inner radial portions of said latticed chambers defining a plurality of chordal spaces each having a variable radial dimension, said fluid inlet means introducing a fluid into said casing which is mixed with the incoming gas introduced through said gas inlet means to form a mixed aggregation which passes through said chordal spaces between said polygonal rotor and said latticed chambers, whereby in passing through the latter the mixed aggregation is repeatedly forced in and out of the latticed chambers as the rotor rotates to thereby impart thereto a repetitive compression and decompression effect to let particles in the mixed aggregation polymerize into liquid which is removed from said casing through said drain outlet.

3,880,624
APPARATUS FOR WASHING GASES AND REMOVING LIQUID ENTRAINED

Orlan M. Arnold, Norwalk, and Carlo A. Vancini, Stamford, both of Conn., assignors to Peabody ABC Corporation, Warsaw, Ind.

Filed Oct. 24, 1973, Ser. No. 409,035
Int. Cl. B01d *47/06*
U.S. Cl. 55—242 **24 Claims**

1. Apparatus for cleaning gases comprising: an air inlet for introducing the gases to be cleaned; a gas washing zone communicating with said inlet including means supplying a liquid spray to said gases; a gas drying zone communicating with said gas washing zone for removing entrained liquid droplets from said gases; a gas outlet communicating with said gas drying zone for removing the cleaned gases; and a liquid outlet communicating with said drying zone for removing the liquid separated from said gases in the drying zone; wherein said gas drying zone includes a series of spaced, curved vanes fixed in said drying zone adjacent said gas washing zone, said vanes being arranged adjacent the gas washing zone so that a controlled portion of the water laden gas impinges upon each of said vanes to provide a metered distribution of water laden gas into individual vanes, with said vanes havinb a curved trailing edge forming a channel for collection of liquid droplets and a forward portion curved towards said gas washing zone,

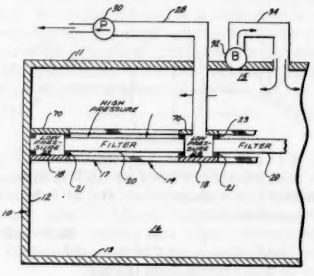


wherein each vane has an oppositely directed vane to form a set with their respective curved forward portions spaced apart a predetermined distance, with respective forward portions of the set farthest from the gas washing zone being spaced closest together and the respective forward portions of succeeding sets towards the gas washing zone being spaced farther apart.

3,880,625
FILTER SYSTEM

Hugh Thomas Shook, West Covina, Calif., assignor to Moore and Banks Company, South El Monte, Calif.

Filed Sept. 28, 1973, Ser. No. 401,630
Int. Cl. B01d *46/10*
U.S. Cl. 55—473 **1 Claim**

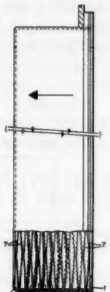


1. Filtering apparatus comprising:
a. a conduit for a fluid to be filtered;
b. means for supplying the fluid to the conduit;
c. a filter disposed in the conduit through which fluid passes from an upstream side to a downstream side and is filtered;
d. imperforate first means forming a first closure between the conduit and around the periphery of the upstream side of the filter;
e. imperforate second means forming a second closure between the conduit and around the periphery of the filter downstream of the first means to define a channel around the filter periphery and in direct communication with substantially all of the filter periphery between the first and second closure means; and
f. means for creating a pressure in the channel between the two closures lower than the pressure of the fluid in the conduit on the downstream side of the filter to prevent fluid from bypassing the filter.

3,880,626
DEVICE FOR SEPARATING LIQUID FROM A GAS STREAM

Gunther H. Griwatz, Mars, and Jack L. Bicehouse, Renfrew, both of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Continuation of Ser. No. 227,988, Feb. 22, 1972, abandoned. This application May 1, 1974, Ser. No. 465,769
Int. Cl. B01d *39/10*
U.S. Cl. 55—485 **2 Claims**



1. A liquid-separation device adapted to be placed across a substantially horizontally flowing stream of gas containing liquid particles that are to be removed from the stream, the device comprising an upright frame with a substantially horizontal passage therethrough through which said stream can flow, and three porous transverse liquid-trapping sections in said frame mounted on edge across said passage and disposed face-to-face therein with spaces between them, the upstream section containing approximately six to eight transverse sheets of fine wire mesh with spaces between them, the middle section being formed from a plurality of transverse fibrous sheets separated by wire mesh sheets with spaces between these fibrous and mesh sheets for agglomerating smaller liquid particles that pass said upstream section into larger particles, the downstream section containing approximately three to eight transverse sheets of fine wire mesh with spaces between them, said wire mesh sheets of the upstream and downstream sections being provided with from six to eight openings per linear inch, the openings through said middle section fibrous sheets being smaller than the openings in the sheets in the upstream and downstream sections, and the bottom of said frame having a drain for escape of liquid draining from said sections.

3,880,627
FILTER WITH INTEGRAL HOUSING

David W. Morton, Minneapolis, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed July 2, 1973, Ser. No. 375,484
Int. Cl. B01d *27/06*
U.S. Cl. 55—499 **8 Claims**

6. A filter assembly comprising:

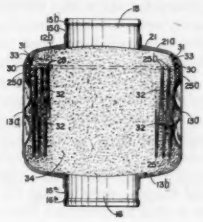
a. a housing including a pair of oppositely disposed generally U-shaped housing members each having two spaced generally parallel wall-like leg portions, said leg portions overlapping to form there between a pair of connective joints;

b. each housing member having a connecting wall portion connecting said leg portions, said leg portions and connecting wall portions having opposite end edges terminating in substantially parallel planes;

c. inlet and outlet means formed one in each of said housing members;

d. opposed end wall members engaging said end edges;

e. filter means in said housing spaced from each of said connecting portions and including spaced end portions one inserted in each of said connective joints between said leg portions to anchor said filter means to said housing members;



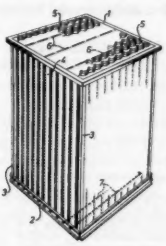
f. gasket means disposed with said filter end portions in each of said connective joints to seal said joints and to seal said end portions therein; and

g. means securing said filter means to said end wall members.

3,880,628
COMPACT FILTER CELLS

Karl-Axel G. Gustavsson, and Holger A. Persson, both of Enkoping, Sweden, assignors to AB Bahco Ventilation Corporation, Enkoping, Sweden

Filed May 31, 1974, Ser. No. 474,963
Claims priority, application Sweden, June 6, 1973, 7307986
Int. Cl. B01d *27/06*
U.S. Cl. 55—500 **1 Claim**



1. A securing and guiding arrangement for compact filter cells of the type comprising a web of textile material folded into a number of deep, transversely extending folds and having longitudinally extending seams at each fold to provide a predetermined number of mutually and identical passages for purified gas, all of said passages being open in one and the same mutual direction and being closed in the opposite direction (at the bottom of the fold), and each of said passages being provided with a shaping member which imparts thereto a particular cross-sectional shape which may be a square shape, said member having a diagonal which coincides with the direction in which the row of passages extends, and wherein two remaining corners of said member lie against corresponding corners of passages in adjacent rows of passages, and wherein each of said rows of passages for purified gas is surrounded by rows of mutually parallel crude-gas passages formed between the folds and having the same square cross-sectional shape as said purified-gas passages, said crude-gas passages being open in one and the same mutual direction which is opposite to that of the purified-gas passages, and are closed in the opposite direction in an upper frame which comprises part of a right-angled parallelepipedic filter cas-

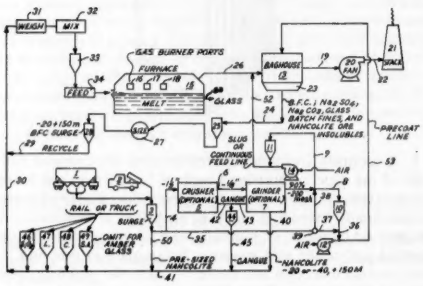
sette, which frame is arranged to be brought, through the intermediary of an intermediate packing member into sealing abutment with a connecting frame arranged in a common filter housing suitable for accommodating a plurality of cassettes, said cassettes, in addition to the upper frame, being provided with a corresponding lower frame and with frame portions which connect the upper and lower frames at the corners thereof, characterized in that the upper frame has the form of an upwardly open U-shaped section, suitably having slightly converging flanges whose edge portion are folded inwardly through an angle of approximately 180°, and which is provided with a number of transverse support stays having rounded upper edges, said stays being securely connected to said upper frame in positions which coincide with a central plane in the crude-gas passages; in that the lower frame is provided with transverse distance stays arranged in the central plane of the crude-gas passage rows, which distance stays together with said shaping member fix the passages against lateral movement in that the compact filter cell along all side edges at the side where the purified gas passages are open is provided with a fold edge of such width that it can be folded in and shaped along at least the inner flange and the bottom of the U-shaped section of the upper cassette frame and be retained in position by means of a resilient sealing strip which when seen in cross section, is rectangular of frusto-triangular in shape and which has a greater height than the flanges; and in that said sealing strip subsequent to said filter cassette being connected to the connecting frame of the filter housing, is arranged to provide sealing between the cassette and the filter housing and between the filter cell and the cassette frame and to increase the securing forces of the folding edges in the U-shaped section so as to provide an operably reliable filter unit.

3,880,629

AIR POLLUTION CONTROL PROCESS FOR GLASS MANUFACTURE

Jacques M. Dulin, Libertyville, Ill., and Edward C. Rosar, Lakewood, Colo., assignors to Industrial Resources, Inc., Chicago, Ill.

Filed July 9, 1973, Ser. No. 377,388
Int. Cl. C03b 1/00
U.S. Cl. 65—27 **32 Claims**



1. A process for control of SO_x and particulates emissions from glass furnace hot flue gases containing said emissions comprising the steps of:

a. contacting said flue gas with a sodium alkali derived from a sodium bicarbonate-containing source, for a time sufficient to react SO_x in said gas with said alkali to produce a sodium sulfur oxide salt of said SO_x,

b. collecting said salt and said particulates in a baghouse as baghouse filter cake material,

c. removing baghouse filter cake material from said baghouse,

d. sizing said baghouse filter cake material to within a range of about −20 + 150 mesh,

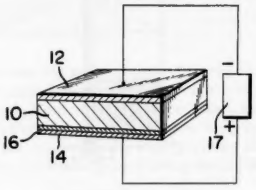
e. returning said sized baghouse filter cake material to said glass furnace, thereby to provide sodium sulfur oxide values to said glass furnace without producing a water pollution disposal problem while controlling said emissions.

3,880,630

METHOD FOR FORMING OPTICAL WAVEGUIDES

Tatsuo Izawa, Tokyo, Japan, assignor to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Nov. 30, 1972, Ser. No. 310,697
Claims priority, application Japan, Dec. 1, 1971, 46-96936
Int. Cl. C03c 21/00
U.S. Cl. 65—30 **4 Claims**



1. The method of fabricating an optical waveguide comprising;

the step of providing a substrate of solid optical dielectric material, and

the step of forming a metal layer on the upper surface of said substrate which serve as a negative electrode, and

the step of masking the lower surface of said substrate to be diffused by ions with an opaque mask having a transparent channels, and

the step of providing molten inorganic salts containing the ions with large electronic polarizability and providing a metal plate in said molten salts, and

the first diffusion step of immersing said substrate in said molten inorganic salts and applying DC voltage between said electrodes so as to produce localized regions of higher refractive index than the remainder of said substrate, and

the second diffusion step of immersing said substrate in molten inorganic salts containing ions only with small electronic polarizability and applying DC voltage between said electrodes so as to migrate said localized region of higher refractive index to the desired depth in said substrate.

3,880,631

METHOD OF IDENTIFYING CHEMICALLY TEMPERED OPHTHALMIC LENSES

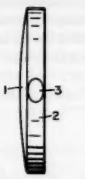
Donald M. Ripley, Elmira, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Nov. 23, 1973, Ser. No. 418,661
Int. Cl. G02b 1/10
U.S. Cl. 65—30 **4 Claims**

1. In a method for chemically-tempering an ophthalmic lens which comprises exposure of the lens to a source of exchangeable alkali metal ions at a temperature in excess of 350°C., the

improvement which comprises:

applying to at least a portion of the lens prior to exposure



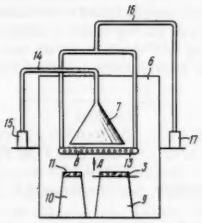
to the source of exchangeable alkali ions a coating containing a prussian blue indicator.

3,880,632

METHOD OF JOINING OPTICAL GLASS PARTS

Galina Yakovlevna Podvigalkina, ulitsa Klubnaya, 22a, kv. 26, Kazan, U.S.S.R.

Filed Aug. 30, 1973, Ser. No. 393,204
Int. Cl. C03b *23/22*
U.S. Cl. 65—37 **6 Claims**



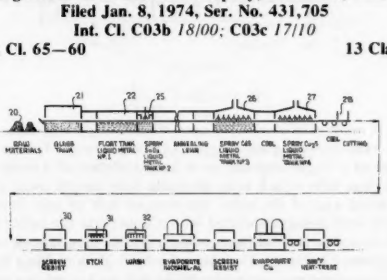
1. A method of joining optical glass parts, comprising the steps of: polishing the flat surfaces of optical glass parts to be joined to an accuracy of no less than 0.5 interference fringe; applying a binding layer in the form of a film of silica to at least one of said surfaces of said optical glass parts to be joined; joining said optical glass parts by optical contact and exposing them to infrared radiation of a gradually increasing density.

3,880,633

METHOD OF COATING A GLASS RIBBON ON A LIQUID FLOAT BATH

John F. Jordan, and Curtis Lampkin, both of El Paso, Tex., assignors to D. H. Baldwin Company, Cincinnati, Ohio

Filed Jan. 8, 1974, Ser. No. 431,705
Int. Cl. C03b *18/00*; **C03c** *17/10*
U.S. Cl. 65—60 **13 Claims**



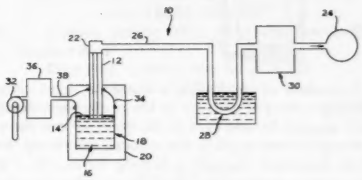
1. A method of fabricating large scale solar cells, comprising moving a continuous strip of glass continuously in a path containing sequential heated liquid float tanks, and forming a SnO_x film on said continuous strip of glass during traverse of said strip of a first of said float tanks, forming a film of CdS microcrystals on said SnO_x film during traverse of said strip through a second of said float tanks, and forming a film of Cu_2S over said CdS film during traverse of said strip through a third of said float tanks, wherein said float tanks contain liquid at temperatures suitable for formation of said films, and wherein said films are spray deposited at rates selected to enable said liquid in said float tanks to maintain the temperatures of the surfaces of said strip of glass constant during the forming of said films.

3,880,634

METHOD AND APPARATUS FOR PRODUCING TUBING FROM SHORT GLASSES

Emil W. Deeg, Woodstock, Conn.; David A. Krohn, Southbridge, and Leslie B. Martel, Sturbridge, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Apr. 24, 1974, Ser. No. 463,489
Int. Cl. C03b *15/14*
U.S. Cl. 65—73 **15 Claims**



1. A method for producing glass tubing from a melt of a glass having a temperature differential between the flow point and the softening point of less than about 550°C, the method comprising the steps of

placing a mold in contact with a surface of the glass melt, the mold comprising a cylindrical shell surrounding a central core, defining a cylindrical space therebetween, and extending in a longitudinal direction, substantially all of the cylindrical space being above the upper surface of the melt, the core having a coefficient of thermal expansion greater than the coefficient of thermal expansion of the glass melt, and means for rendering the effective coefficient of thermal expansion of the shell less than the coefficient of thermal expansion of the glass melt,

drawing a vacuum within the cylindrical space for a time sufficient to allow ambient pressure on the upper surface of the glass melt to force the molten glass into the mold to a predetermined height,

cooling the mold and contained glass to solidify the glass into a tube, and

separating the mold from the tube of glass.

6. Apparatus for producing glass tubing from a melt of a glass having a temperature differential between the flow point and the softening point of less than about 550°C, the apparatus comprising

means for containing and melting the glass,

a mold positioned in contact with a surface of the glass melt, the mold including a cylindrical shell and a core centrally disposed in the shell and coextending along a longitudinal direction, and defining a cylindrical space therebetween, the core having a coefficient of thermal expansion greater than the coefficient of thermal expansion of the glass, and means for rendering the effective coefficient of thermal expansion of the shell less than that of the glass, and

means for drawing a vacuum within the cylindrical space between the mold core and shell thereby allowing ambient pressure on the upper surface of the glass melt to force the molten glass from the crucible into the mold to a predetermined height.

3,880,635
METHOD AND APPARATUS FOR PRESS BENDING GLASS SHEETS

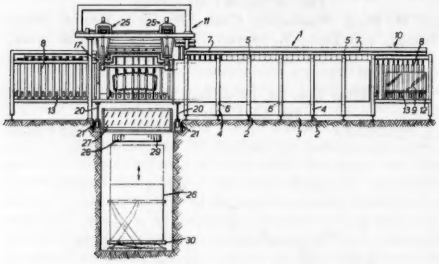
Harry Ross Scarlett Jack, Tanworth-in-Arden, and Peter Henry Richards, Kenilworth, both of England, assignors to Triplex Safety Glass Company Limited, London, England

Filed Mar. 12, 1974, Ser. No. 450,459

Claims priority, application United Kingdom, July 20, 1973, 34703/73; July 20, 1973, 34704/73

Int. Cl. C03b *23/02, 27/00*

U.S. Cl. 65—106 **57 Claims**



1. A method of processing a hot glass sheet comprising supporting a sheet of glass on its lower edge, providing near-vertical support for one face of the sheet so that the sheet is disposed at a small angle to the vertical, advancing the sheet while so supported through a heating furnace to a shaping station, closing shaping dies, oriented complementarily to the sheet disposed at a small angle to the vertical, on to the sheet at the shaping station, tilting the dies through an angle to orient them vertically and bring the shaped sheet at the shaping station to a vertical position, then opening the dies and vertically removing the vertically oriented shaped sheet from the shaping station of subsequent thermal treatment.

19. Apparatus for processing a glass sheet, comprising a tilting enclosure movable between a first position and a second position and containing means for supporting a hot glass sheet at a near-vertical angle, which enclosure is formed with access means permitting a hot glass sheet, in said first position of said tilting enclosure, to be received on the support means at said near-vertical angle, and, in said second position of said tilting enclosure, to be removed vertically from the enclosure, cooperating glass-engaging dies mounted in the enclosure one of which dies is constructed to advance from behind and through said support means as the dies close on to the glass sheet, means for tilting said enclosure and said dies mounted in said enclosure from said first position to said second position and responsively orienting the glass sheet vertically for removal from said enclosure, and means for engaging the glass sheet when it is between the closed dies and for removing the sheet vertically from the enclosure when the dies open.

3,880,636
SHAPING GLASS SHEETS TO COMPLEX BENDS

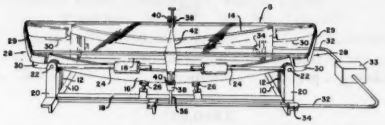
Melvin W. Tobin, New Kensington, and Thomas J. Reese, Sarver, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 27, 1973, Ser. No. 419,468

Int. Cl. C03b *23/02*

U.S. Cl. 65—107 **8 Claims**

1. A method of bending a glass sheet along a line of bending that has a creased appearance in one portion of said line and a gently bent uncreased appearance in another portion of said line, comprising applying a line of electroconductive material of non-uniform electroconductivity per unit length along a surface of the glass sheet to be bent in such a manner that a portion of said electroconductive material having a greater resistance per unit length is aligned with the portion of the glass sheet to develop a creased appearance and a portion of said line of electroconductive material having a lesser resistance per unit length is aligned with the portion of the line to be bent to develop an uncreased appearance, supporting the glass sheet with said electroconductive material so arranged in bending relation to a shaping mold, heating the glass sheet with the electroconductive material applied thereto to a temperature between the strain point and the softening point of the glass sheet in an enclosed atmosphere, applying electric power through said line of electroconductive material, causing



said heated glass sheet to become heated at a non-uniform rate along said line of bending and bent sharply to form a creased appearance in the region aligned with the portion of electroconductive material having greater resistance per unit length and bent gently to an uncreased appearance in the region of said glass sheet aligned with said portion of electroconductive material having lesser resistance per unit length and discontinuing the application of said electrical power before the gently bent portion develops a crease.

3,880,637
METHOD AND APPARATUS FOR PRODUCING AMPOULES

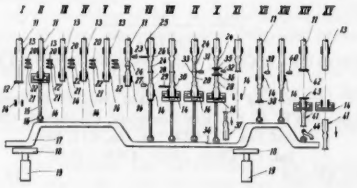
Hans-Joachim Dichter, Sachsendamm 93, 1 Berlin 62, Germany

Filed July 5, 1973, Ser. No. 376,880

Claims priority, application Germany, July 7, 1972, 2234062

Int. Cl. C03b *21/06*

U.S. Cl. 65—113 **8 Claims**



1. A method of producing open mouth single ampoules and glass vials including the steps of drawing a neck of twice the length of a single ampoule neck from a portion of a vertically held glass tube which is an ampoule body length away from the fused end of the tube, the bottom half of said double-length neck being associated with a lower and the upper half with an upper ampoule to provide a double-length neck separating the bottom part of the tube by a glass melting flame from the upper part of the double-length neck, applying an air jet at the point of separation of the two parts to prevent their open ends from being closed by fusion, and separating the second ampoule from the glass tube by applying a melting flame at a point one ampoule body length above the upper part of the double-length neck still attached to the glass tube to form an open mouth single ampoule.

3,880,638

THERMAL TEMPERING OF NON-OXIDE GLASS COMPOSITIONS

Harold C. Hafner, Richardson, and Andre E. Tilton, Garland, both of Tex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 21, 1973, Ser. No. 427,285
Int. Cl. C03b *27/00*
U.S. Cl. 65—116 **3 Claims**

1. A method for the thermal tempering of a glass article having a non-oxide, ternary compositional content composed of germanium, selenium and a third element selected from the group consisting of antimony, arsenic, iodine, gallium, mercury and tellerium which comprises the steps of

A. placing said glass article in a preheat furnace at room temperature, raising the temperature of said preheat furnace to a range of from about 40° to 50°C above the annealing temperature of said glass and maintaining said temperature for about 1 hour;

B. transferring said pre-heated glass to a tempering furnace operating at a tempering temperature of from about 400° to 500°C, retaining said glass in said tempering furnace until the surface thereof reaches a temperature that produces a viscosity of between about 10^{8} and 10^{9} poise; and

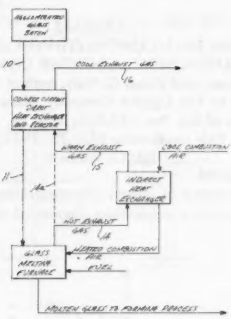
C. transferring said tempered glass to an oil bath operating at a quenching temperature sufficiently elevated to allow for the quenching of said tempered glass article and cooling said oil bath to room temperature.

3,880,639

SULFUR RECOVERY FROM GLASS MELTING AND REFINING

John J. Bodner; Everett F. Grubb; Kenneth J. McCormack, all of Toledo, and Ronald H. Moore, Sylvania, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 13, 1972, Ser. No. 314,568
Int. Cl. C03b *5/16*
U.S. Cl. 65—134 **10 Claims**



1. In the method for melting agglomerates of soda-lime, glass batch ingredients in a combustion heated, continuous, glass melting furnace to yield glass and combustion exhaust gas, wherein batch ingredients are continuously fed to the furnace and molten glass continuously issues therefrom, and wherein the total combined sulfur supplied to the glass melting furnace in the batch ingredients and combustion fuel is in excess of the total combined sulfur leaving the furnace in the gaass, and such excess sulfur is present in said exhaust gas as SO_x, the improvement for recovering said excess sulfur while simultaneously lowering the glass melting and refining temperatures comprising the steps of:

contacting said agglomerates with said exhaust gas at a temperature and for time sufficient to remove as an in situ reaction product with said agglomerates at least about 90% by weight of the combined sulfur initially present in said exhaust gas, said reaction product containing combined sulfur in a form which facilitates glass refining, said contact being at a temperature and for a time insufficient for fusing said agglomerates,

separating the resulting reacted agglomerates from said exhaust gas,

charging said reacted agglomerates to said glass melting furnace, and

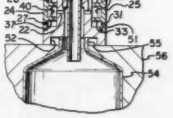
maintaining the amount of sulfur in said agglomerates, prior to contacting said agglomerates with said exhaust gas, to be substantially the same as the amount of sulfur issuing from the furnace per unit weight of molten glass.

3,880,640

BLOW HEAD WITH SOUND ENERGY ABSORBING MEANS

Charles W. Jenkins, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 5, 1973, Ser. No. 421,746
Int. Cl. C03b *9/14*
U.S. Cl. 65—261 **14 Claims**



1. An improved blow-head assembly, connected to a source of gas under pressure, for injecting said gas under pressure into a parison contained at least partially within a final shape mold to expand the parison into conforming relationship with the final shape mold, comprising:

a main body member which includes:

first passage means, extending through said body member, for directing gas from said source into said parison;

second passage means, in said body member, communicating with the interior of said parison, for removing gas from said parison after the introduction of gas to said parison from said source;

an exhaust chamber, having inlet means and outlet means, said inlet means communicating with said second passage means, and said outlet means communicating with the outside atmosphere;

and sound energy-absorbing means, positioned within said exhaust chamber opposite said inlet means, for partially absorbing the energy of said gas from said parison.

3,880,641

MATERIALS CONTAINING ANTI-CAKING POWDERS

Francis William Anthony Sutton, Cornwall, England, assignor to English Clays Lovering Pochin & Company Limited, St. Austell, Cornwall, England

Continuation of Ser. No. 754,730, Aug. 22, 1968, abandoned. This application Oct. 13, 1972, Ser. No. 297,490
Claims priority, application United Kingdom, Aug. 30, 1967, 39633/67
Int. Cl. C05c *9/00*
U.S. Cl. 71—30 **8 Claims**

1. A granular hygroscopic fertilizer having anticaking prop-

erties wherein the granules of the hygroscopic fertilizer are at least partially coated

with up to 3 percent by weight of a pulverized calcined kaolin clay which has been obtained by heating a kaoline clay at a temperature in the range of from 500°C to 1500°C for a time such that further heating of said clay for 1 hour at 1000°C would produce a weight loss of not more than 3 percent, wherein at least 40 percent by weight of the clay particles being smaller than 2 microns equivalent spherical diameter.

3,880,642

BIS-ANILIDE COMPOSITIONS AS ALGICIDAL AGENTS

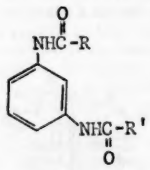
Don R. Baker, Orinda; Eugene G. Teach, El Cerrito, both of Calif., and Duane R. Arneklev, Antelope, Mont., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 198,450, Nov. 12, 1971, abandoned. This application Apr. 9, 1973, Ser. No. 349,342

Int. Cl. A01n *9/20*

U.S. Cl. 71—67 **29 Claims**

1. The method for inhibiting and preventing algae growth in water, which comprises adding to the algae environment an algicidally effective amount of a compound of the formula



wherein R is alkyl having from 2 to 7 carbon atoms, inclusive and R′ is selected from the group consisting of benzyl, 3,4-dichlorophenyl, 2,4-dichlorophenyl, 2,4-dichlorophenoxymethyl, 1-isobutenyl, alkyl having from 2 to 7 carbon atoms, inclusive, and haloalkyl having 1 to 2 carbon atoms, inclusive.

3,880,643

METHOD FOR INHIBITING THE GROWTH OF TOBACCO SUCKERS

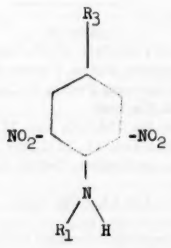
Anson Richard Cooke, Hatfield, and George Robert Starke, Perkasie, both of Pa., assignors to Amchem Products, Inc., Ambler, Pa.

Continuation-in-part of Ser. No. 107,598, Jan. 18, 1971, abandoned. This application Aug. 22, 1972, Ser. No. 282,879

Int. Cl. A01n *9/20*

U.S. Cl. 71—78 **5 Claims**

1. A method of controlling the growth of lateral buds of a mature tobacco plant which comprises applying thereto a growth controlling amount of a compound of the formula:



wherein R_1 is selected from the group consisting of hydrogen, straight or branched chain lower alkyl, alkenyl of 2 to 7 carbon atoms, mono cycloalkyl of 3 to 6 carbon atoms and mono cycloalkyl (3 to 6 carbon atoms) lower alkyl; and R_3 is selected from the group of hydrogen, straight or branched chain lower alkyl and alkenyl of 2 to 7 carbon atoms.

3,880,644

SULFANILAMIDE HERBICIDES

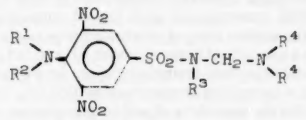
James R. Beck, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 157,679, June 28, 1971, Pat. No. 3,772,277. This application July 13, 1973, Ser. No. 379,036

Int. Cl. A01n *9/22*

U.S. Cl. 71—88 **12 Claims**

1. The method suitable for effecting plant growth inhibition which comprises applying to a plant part a growth-inhibiting amount of an active agent, said active agent being a compound of the formula



wherein R^1 represents hydrogen or R^2, and each R^2 independently represents loweralkyl of C_1–C_4, loweralkenyl of C_3–C_4, loweralkynyl of C_3–C_4, or radical of the formula $-CH_2-CH_2-CH_2)_nY$ wherein n represents 0 or 1, and Y represents methoxy, cyano, bromo, or chloro, subject to the limitation that the groups represented by R^1 and R^2 together contain from 5 to 8, both inclusive, carbon atoms; R^3 represents hydrogen or methyl; and each R^4, if taken separately, represents propyl, or both R^4, if taken together, jointly constitute with the nitrogen atom an aziridine, pyrrolidine, piperidine, hexahydroazepine, morpholine, or piperazine ring, or such ring bearing mono- or diloweralkyl substitution of a total of not more than 3 carbon atoms.

3,880,645

HERBICIDAL COMPOSITIONS CONTAINING M-AMINOBENZALDOXIME COMPOUNDS

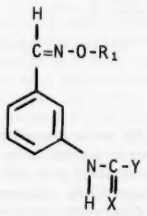
Gabriel Kornis, and Eldon G. Nidy, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 145,016, May 19, 1971, Pat. No. 3,778,473. This application May 29, 1973, Ser. No. 364,821

Int. Cl. A01n *9/12*

U.S. Cl. 71—98 **4 Claims**

1. The method of selectively controlling plant growth by applying thereto a controlling amount of the compound of



where

R_1 = H or nitrophenyl,

X = O or S,

$$Y = N\begin{matrix}R_2\\R_3\end{matrix} \text{ or } OR_3$$

or OR_3

R_2 = H or R_3

R_3 = alkyl of from 1 to 8 carbon atoms, inclusive, alkenyl of from 3 to 8 carbon atoms, inclusive, aralkyl of from 7 to 13 carbon atoms, inclusive, aryl of from 6 to 10 carbon atoms, inclusive, (provided both R_1 and R_2 are not aryl at the same time).

3,880,646
METHOD OF CONTROLLING WEEDS WITH A COMBINATION OF ISOPROPYL N-(3-CHLOROPHENYL)-CARBAMATE AND SODIUM AZIDE

William C. Mc Connell, Griffin, Ga., and Henry W. Rahn, Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 755,765, Aug. 26, 1968, abandoned, which is a continuation of Ser. No. 632,478, Feb. 13, 1967, abandoned, which is a division of Ser. No. 400,216, Sept. 29, 1964, Pat. No. 3,376,125. This application Oct. 22, 1971, Ser. No. 191,821The portion of the term of this patent subsequent to Nov. 13, 1990, has been disclaimed.

Int. Cl. A01n *9/20*

U.S. Cl. 71—111 **5 Claims**

1. In the method of controlling weeds by applying to the soil a herbicidal amount of isopropyl-N-(3-chlorophenyl)-carbamate, the improvement comprising applying to the soil an amount of sodium azide sufficient to kill said microorganisms thereby both extending the soil life of said organic herbicide and, upon decomposition of the sodium azide, providing nitrogen values to said soil.

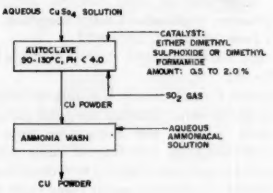
3,880,647
HYDRO METALLURGICAL PROCESS FOR COPPER RECOVERY

Norman Robert Tipman, 90 Tyndall Ave., Apt. 804, Toronto, Ontario, Canada

Filed Dec. 6, 1973, Ser. No. 422,590

Int. Cl. C22b *15/12*

U.S. Cl. 75—.5 A **6 Claims**



1. In a method for recovering copper from copper sulphides wherein the sulphides are roasted to convert them to oxides and sulphates, the product is leached in sulphuric acid to form an aqueous copper sulphate solution, and the copper content of the solution is reduced and precipitated from the solution as elemental copper powder using sulphur dioxide at elevated temperature and pressure, the improvement which comprises: providing at least one catalyst, selected from the group consisting of dimethyl sulphoxide and dimethyl formamide, in the copper sulphate solution to be subjected to reduction in an amount between 0.5 and 2.0% by weight of the solution.

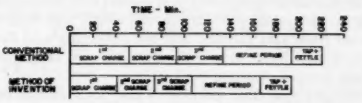
3,880,648
METHOD FOR PRODUCING STEEL IN AN ELECTRIC ARC FURNACE

Alexander C. Forrest, Inglewood, Calif., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed June 27, 1973, Ser. No. 374,150

Int. Cl. C21c *5/52*

U.S. Cl. 75—13 **4 Claims**



1. An improved method for producing steel in an electric arc furnace which is equipped with two roofs movably interchangeable thereon, a first roof being equipped with more than one burner adapted to burn a fuel and a waste gas duct connectable to a flame trap and a second roof being provided with a plurality of apertures whereby carbon electrodes can be lowered into said furnace to thereby provide electric power thereto and a waste gas duct connectable to said flame trap and a preheater station adjacent to the electric arc furnace wherein a plurality of clamshell-type charging buckets, each bucket containing a portion of the total scrap steel and iron required to produce a heat of steel, are positioned to receive said first roof, said method comprising:

a. charging a first portion of the total charge of scrap steel and iron required to produce a heat of steel into said furnace,

b. placing said first roof atop said furnace and connecting said roof to said flame trap, a damper in said flame trap being opened,

c. burning fuel in said burners for a time to heat said first portion of said total charge of scrap steel and iron to within a temperature range of about 900° F.–1,200° F.,

d. thereafter disconnecting said first roof from said flame trap and removing said first roof from said furnace,

e. placing said first roof atop a charging bucket containing a second portion of the scrap required to produce a heat of steel and connecting said first roof to said flame trap and simultaneously placing said second roof atop said furnace, lowering said carbon electrodes into said furnace through said apertures in said second roof and connecting said second roof to said flame trap and closing said damper in said flame trap to thereby form a continuous passage from said furnace to said charging bucket, said damper remaining in the closed position for subsequent operations,

f. melting said first portion of said total charge of scrap steel and iron in said furnace by electric power and heating said second portion of said total charge of scrap steel and iron in said charging bucket by passing the hot gases formed in said furnace through said waste ducts and downwardly through said second portion of said total charge of scrap steel and iron in said charging bucket to bring said scrap to within a temperature range of about 900° F.–1,200° F.,

g. thereafter disconnecting said second roof from said flame trap, removing said carbon electrodes and said second roof from said furnace and simultaneously disconnecting said first roof from said flame trap and removing said first roof from said charging bucket,

h. charging said second portion of said total charge of scrap steel and iron into said furnace,

i. placing said second roof atop said furnace and lowering said carbon electrodes into said furnace and reconnecting said second roof to said flame trap, while simultaneously placing said first roof atop a second charging bucket containing a third portion of said total charge of scrap steel and iron in said preheater station and reconnecting said first roof to said flame trap.

j. melting said second portion of said total charge of scrap steel and iron by electric power in said furnace and preheating said third portion of said total charge of scrap steel and iron in said second charging bucket to within a temperature range of about 900° F.–1,200° F. by passing hot combustion gases formed in said furnace through said waste ducts and downwardly through said third portion of said total charge of scrap steel and iron in said second charging bucket,

k. thereafter disconnecting said second roof from said flame trap, removing said carbon electrodes and said second roof from said furnace and disconnecting said first roof from said flame trap and removing said first roof from said second charging bucket,

l. charging said third portion of said total charge of scrap steel and iron into said furnace,

m. replacing said second roof atop said furnace and lowering said carbon electrodes into said furnace,

n. reconnecting said second roof to said flame trap and placing said first roof atop another charging bucket in said preheater station and reconnecting said first roof to said flame trap, said other charging bucket containing a first portion of the total charge of scrap steel and iron required to make an additional heat of steel in said furnace,

o. melting said third portion of said total charge of scrap steel and iron and refining the molten bath in said furnace by electric power,

p. preheating said first portion of said total charge of scrap steel and iron to within a temperature range of about 900° F.–1,200° F. by passing hot combustion gases formed in said furnace during said melting and refining periods through said waste ducts and downwardly through said first portion of said total charge of scrap steel and iron in said other charging bucket,

q. thereafter disconnecting said second roof from said flame trap,

r. removing said carbon electrodes and said second roof from said furnace, tapping said refined steel from said furnace,

s. fettling said furnace and disconnecting said first roof from said charging bucket, and

t. charging said first portion of said total charge of scrap steel and iron into said furnace and repeating at least the above steps (e) through (m) and (o) and (r) to thereby produce an additional heat of steel.

3,880,649

METHOD AND APPARATUS FOR HEATING PIECES OF STEEL SCRAP

William M. Bloom, Pittsburgh, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Jan. 10, 1974, Ser. No. 432,387
Int. Cl. C21c *7/00*
U.S. Cl. 75—60 **8 Claims**

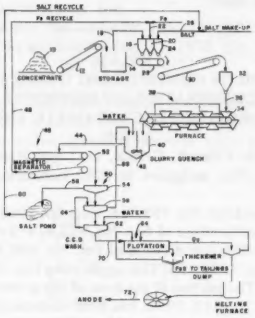
1. The method of heating pieces of steel scrap which comprises providing a container having an open top, charging through said open top a charge of said pieces of steel scrap in such a manner that the central part of the charge is substantially denser than the peripheral part of the charge, placing a cover on top of said container over said open top, directing a plurality of spaced apart fuel-oxygen flames downwardly into said container around the periphery thereof, discharging the products of combustion of said flames from said container adjacent the top thereof, controlling the pressure and proportions of said fuel and oxygen to obtain a reducing atmosphere under pressure in said container, continuing flow of said flames into said container until said scrap is heated to an average temperature above 1,500°F, with at least some of the scrap reaching the liquid phase, and then pouring molten iron into said container to further raise the temperature of said scrap.

3,880,650

RECOVERY OF COPPER FROM CHALCOPYRITE

J. Paul Pemsler, Lexington, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.

Filed Jan. 28, 1974, Ser. No. 437,237
Int. Cl. C22b *15/00*
U.S. Cl. 75—72 **44 Claims**



1. A process for recovering copper from a concentrate containing copper and sulfur comprising the following steps:

a. mixing the concentrate with iron and a fusible ionic salt;

b. roasting the mixture of step (a) at a temperature below 475°C to produce a reaction product containing elemental copper and pyrrhotite; and

c. separating the copper from the reaction product.

3,880,651

CHLORINE LEACHING OF NON-FERROUS METAL VALUES WITH AMMONIACAL SOLUTIONS

Paul Etienne Queneau, Stone House, Cornish, N.H.; Herm Jan Roorda, Huis te Landelaan 273, Rijswijk, Netherlands, and Stanley Charles Townshend, 77 Pontamman Rd., Ammanford, Carmarthenshire, Wales

Filed July 13, 1972, Ser. No. 271,589
Claims priority, application United Kingdom, July 10, 1971, 33405/71; June 15, 1972, 28094/72
Int. Cl. C22b *3/00, 15/10, 23/04, 47/00*
U.S. Cl. 75—82 **29 Claims**

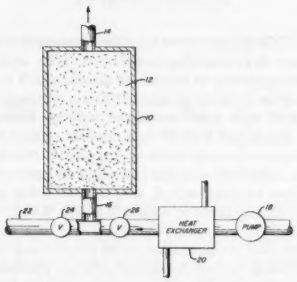
1. A process for selectively leaching at least one reduced non-ferrous metal value selected from the group consisting of nickel, cobalt, copper, and manganese from a ferruginous material containing the non-ferrous value which comprises reducing said ferruginous material to reduce to metal substantially all of said non-ferrous metal value from the group consisting of nickel, cobalt and copper but not more than 5 parts of iron for each part in total of said nickel, cobalt and copper forming an aqueous immersion of said reduced ferruginous material, introducing gaseous chlorine into the immersion to chlorinate the metallic non-ferrous metal values and to produce an aqueous solution of the chlorinated non-ferrous metal values, adding at least one compound selected from the group consisting of ammonia and ammonia-containing compounds to the aqueous solution in amounts sufficient to maintain the pH value thereof between about 4 and 2 so that said reduced non-ferrous values are extracted from the ferruginous material while chlorination of said reduced iron is inhibited and recovering the non-ferrous metal value from the aqueous solution.

3,880,652

METHOD FOR PURIFICATION OF TITANIUM SPONGE

William E. Wehn; George B. Cobel, both of Midland, Mich., and William E. Lusby, Severna Park, Md., assignors to Crucible Inc., Pittsburgh, Pa.

Filed Nov. 9, 1970, Ser. No. 87,762
Int. Cl. C22b 53/00
U.S. Cl. 75—84.5 9 Claims



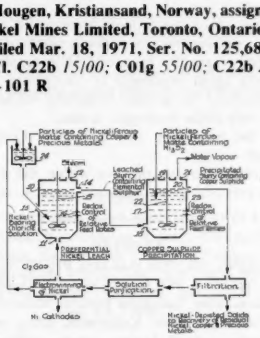
1. A method for removing unreacted reductant present with titanium subsequent to production thereof by reaction of a reductant with a titanium compound to produce titanium by reduction of said titanium compound, said method comprising providing a reaction product mass of unreacted reductant and titanium within a sealed vessel, introducing an inert gas to said vessel at a temperature above the melting temperature of said unreacted reductant, circulating said gas through said vessel and into contact with said reaction product mass to volatilize said unreacted reductant and removing the volatilized product from said vessel, whereby said unreacted reductant is separated from said titanium.

3,880,653

CHLORINE LEACH PROCESS

Leif Reidar Hougen, Kristiansand, Norway, assignor to Falconbridge Nickel Mines Limited, Toronto, Ontario, Canada

Filed Mar. 18, 1971, Ser. No. 125,682
Int. Cl. C22b 15/00; C01g 55/00; C22b 23/04
U.S. Cl. 75—101 R 7 Claims



1. In a process for recovering metal from solid particles selected from sulphides and alloys and containing at least two metals selected from nickel, copper and precious metals, by chlorine leaching the particles as an agitated slurry in a cuprous ion-bearing aqueous chloride solution, the redox potential of which increases upon feeding chlorine thereto and decreases upon feeding the particles thereto, the improvement for leaching at least one metal preferentially with respect to more noble metal in the particles comprising:

i. controlling the rate of feeding of chlorine relative to the rate of feeding of particles to the solution such that the redox potential of the solution is controlled substantially at a selected potential in the range between 250 mv and 550 mv at which at least one metal is leached preferentially with respect to said more noble metal in the particles, and,

ii. producing a leach solution containing at least one metal and a leach residue containing said more noble metal.

3,880,654

CORROSION RESISTANT AUSTENITIC STEEL

Albert G. Hartline, III, Tarentum, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Nov. 28, 1973, Ser. No. 419,576
Int. Cl. C22c 39/20, 39/32, 39/54
U.S. Cl. 75—122 7 Claims

1. An alloy consisting essentially of about 21–45% manganese, about 10–30% chromium, about 1–4% nickel, about 0.85–3% nitrogen, up to 1% carbon, up to 2% silicon and the balance iron and residuals wherein the composition is such that:

$$(1)\quad \%Cr + 0.8(\%Mn) - 11.8(\%N - 0.1) - 1.23(\%Ni) \quad 28.5$$

$$(2)\quad \frac{30(\%Cr + \%N) + 0.5(\%Mn) + \%Ni}{\%Cr + 1.5(\%Si)} \quad 1.5.$$

3,880,655

TITANIUM BASE ALLOY

Sergei Georgievich Glazunov, Leninsky prospekt 41, kv. 62; Olga Petrovna Solonina, ulitsa akademika Pavlova 36, kv. 130; Nina Mikhailovna Ulyakova, ulitsa Lyusinovskaya 36/50, kv. 124; Vera Platonovna Kuraeva, ulitsa Pervomaiskaya 86/18, kv. 26; Nadezhda Fedorovna Lyapicheva, ulitsa Smolenskaya-Sennaya 23/25, kv. 170, and Oleg Alexandrovich Nikishov, ulitsa Reutovskaya 22, korpus 1, kv. 20, all of Moscow, U.S.S.R.

Filed Nov. 17, 1972, Ser. No. 307,531
Int. Cl. C22c 15/00
U.S. Cl. 75—175.5 1 Claim

1. A titanium base alloy consisting essentially of, by weight, 6.0 to 7.5% of aluminum, 0.5 to 2.0% of zirconium, 0.5 to 2.0% of lead, 1.5 to 2.7% of molybdenum, 0.2 to 1.2% of tungsten, 0.1 to 0.35% of silicon, 0.2 to 0.5% of chromium, 0.05 to 0.1% of rhenium, and the balance essentially titanium.

3,880,656

ELECTROPHOTOGRAPHIC METHOD FOR COLORED IMAGES

Shinichiro Nagashima; Kaichi Tsuchiya; Yoshihiro Sakamoto; Hiroshi Yamakami, all of Tokyo, and Seiji Tomari, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 28, 1972, Ser. No. 293,160
Claims priority, application Japan, Oct. 2, 1971, 46-77423; Oct. 5, 1971, 46-78506; Oct. 5, 1971, 46-78507; Oct. 5, 1971, 46-78508; Oct. 26, 1971, 46-84804; Nov. 25, 1971, 46-94735; Dec. 6, 1971, 46-98413; Jan. 31, 1972, 47-11561
Int. Cl. G03g 9/02
U.S. Cl. 96—1.2 20 Claims

1. An electrophotographic method which comprises (I) developing an electric latent image formed on a photosensitive member comprising a photoconductive material containing a color forming agent (B) in a surface for forming a visible image with charged toner particles containing a color forming agent (A) and a color forming auxiliary agent having a melting point ranging from 40°C to 130°C selected from the group consisting of fatty acid, fatty acid metal salt, fatty acid ester, fatty acid amide, fatty acid anilide and solid plasticizer, said color forming auxiliary agent added in the amount of 5–200 parts per 100 parts of said color forming agent (A); and (II) heating to cause a thermal color forming reaction between the color forming agent (A) in the toner and the color forming agent (B) in the photosensitive member resulting in the forma-

tion of a colored fixed image on the photosensitive member, the color forming agent (A) being selected from the group consisting of

1. diarylphalides,
2. leuco auramines,
3. acryl auramines,
4. α, β-unsaturated arylketones,
5. basic monoazo dyestuff,
6. rhodamine B lactams,
7. polyaryl carbinols,
8. benzoindolino spiropyrans,
9. phthalans, and
10. spirophthalans,

and the color forming agent (B) being selected from the group consisting of

1. polymer of phenol and aldehyde,
2. polymer of phenol and acetylene,
3. rosin modified maleic acid resin,
4. hydrolyzed product of copolymer of styrene and maleic anhydride,
5. hydrolyzed product of polymer of carboxy polyethylene,
6. hydrolyzed product of copolymer of vinyl methyl ether and maleic anhydride,
7. hydrolyzed product of copolymer of ethylene and maleic anhydride,
8. Japanese acid clay,
9. bentonite,
10. diatomaceous earth,
11. bisphenol compounds containing carboxyl radical in a molecule,
12. polymers of bisphenol compounds containing carboxyl radical in a molecule, and
13. phenolic material.

3,880,657

CONDUCTING LAYER FOR ORGANIC PHOTOCONDUCTIVE ELEMENT

Arthur A. Rasch, Kodak Park Division, Rochester, N.Y. 14650, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 8, 1974, Ser. No. 486,284
Int. Cl. B44d *1/18*; **G03g** *5/00*
U.S. Cl. 96—1.5 **12 Claims**

1. A unitary multilayer photoconductive element comprising a support, a conducting layer overcoating said support, and a hydrophobic organic photoconductive layer overcoating said conducting layer, said conducting layer having (a) an electrical resistivity less than about 10^8 ohm per square and (b) a composition consisting essentially of an intimate physical mixture of at least one protective inorganic oxide and from about 30 to about 70 weight percent of at least one electrically conducting metal.

3,880,658

PHOTOGRAPHIC ELEMENTS CONTAINING OXICHROMIC COMPOUNDS WITH REDUCED AZOMETHINE LINKAGES

Gregory James Lestina, Rochester, and Walter Monroe Bush, Victor, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 206,836, Dec. 10, 1971, abandoned. This application Nov. 22, 1972, Ser. No. 308,869
Int. Cl. G03c *7/00*, *5/54*, *1/40*, *1/10*
U.S. Cl. 96—29 D **75 Claims**

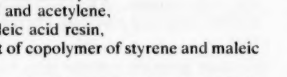
1. A photographic element comprising a support and at least one layer thereon containing a photographic silver halide composition having associated therewith 1) an oxichromic compound which is diffusible in an alkaline processing medium through organic colloid layers of said element and said compound has the formula:

D—(OC)

or 2) an oxichromic compound of the formula:

(OC)—LINK—$(COUP^2—BALL)_n$

wherein D is an aromatic group which is a silver halide developer; (OC) is a group which upon oxidation will form an imine dye chromophore and has the structure:



wherein (COUP) is a color coupler connected to the nitrogen atom at its coupling position, Ar is an arylene group containing from 6 to 20 carbon atoms, and X is an amino group or an hydroxy group; LINK is a connecting radical which will split when contacted with an oxidized silver halide developer; $COUP^2$ is a coupler radical which is a 5-pyrazolone coupler radical, a pyrazolotriazole coupler radical, a phenolic coupler radical or an open-chain ketomethylene coupler radical, said $COUP^2$ being substituted in the coupling position with said LINK; BALL is a photographically inert organic ballasting radical of such molecular size and configuration as to render said compound nondiffusible during development in an alkaline processing composition; and *n* is an integer of 1 to 2.

3,880,659

TRIAZOLIUM SALT PHOTOREDUCTIVE IMAGING

David S. Bailey, and Michael D. Shea, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 2, 1973, Ser. No. 384,860
Int. Cl. G03c *5/24*, *1/52*
U.S. Cl. 96—48 R **46 Claims**

1. In a photographic element having a support and at least one radiation-sensitive image recording layer, the improvement in which said image recording layer is comprised of a source of labile hydrogen atoms, a triazolium salt capable of reduction to an azo-amine dye, and a photoreductant capable of producing a base activatible reducing agent precursor on exposure to actinic radiation in the presence of said labile hydrogen atoms.

38. An image recording process comprising

converting a photoreductant within a selected areal portion of a radiation-sensitive layer of a photographic element to a reducing agent precursor by imagewise exposing the photoreductant to actinic radiation while in reactive contact with labile hydrogen atoms,

activating the precursor with a base to form a reducing agent and

reducing triazolium salt present within the selected areal portions containing the reducing agent to azoamine dye.

3,880,660

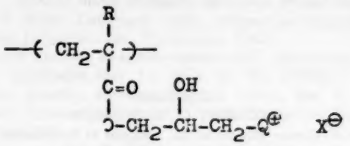
PROCESSING SILVER HALIDE PHOTOGRAPHIC MATERIAL WITH A POLYMERIC DEFOAMING AGENT

Masao Ishihara, Hino; Sadatugu Terada; Masayoshi Mayama, both of Hachiojl; Tohru Kobayashi, Hino, and Riyouzou Maeda, Fuchu, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

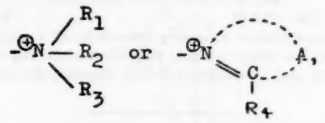
Filed Dec. 7, 1972, Ser. No. 312,792
Claims priority, application Japan, Dec. 7, 1971, 46-98316
Int. Cl. G03c *5/26*
U.S. Cl. 96—50 R **6 Claims**

1. In a method for processing a silver-halide light-sensitive photographic material wherein said light-sensitive photographic material is brought into contact with a processing solution in the presence of a foam generating material, the improvement which comprises providing as a defoaming agent during processing an effective amount of a polymer having a polymerization degree of from 20 to 1500, said polymer being a homopolymer or a copolymer comprising, as a polymer component, 30 mole percent or more of a structural unit of

the following general formula:



wherein R is hydrogen or X^- is an anion; and Q^+ is



where R_1 is lower alkyl, phenyl or benzyl; R_2 and R_3 are individually lower alkyl provided that in case R_1 is lower alkyl, R_2 and R_3 may form together a nitrogen-containing 5- to 6-membered heterocyclic nucleus; and A is a group of non-metal atoms selected from carbon, nitrogen and sulfur which are necessary to form a 5- to 6-membered heterocyclic nucleus together with $-N^+=C-$; R_4 is hydrogen or methyl.

3,880,661

SILVER HALIDE EMULSION CONTAINING ACYLAMIDOPHENOL PHOTOGRAPHIC COUPLERS

Philip T. Lau; Ilmari F. Salminen, and Leo E. Beavers, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 213,812, Dec. 29, 1971, abandoned. This application Oct. 1, 1973, Ser. No. 402,566

Int. Cl. G03c *7/00, 1/40*

U.S. Cl. 96—55 **41 Claims**

1. A photographic silver halide emulsion containing as color photographic coupler a phenolic cyan dye-forming coupler compound having a p-hydroxy-m-alkylphenoxyalkylcarbonamido group substituted on a non-coupling ring position of the phenolic nucleus of the coupler.

3,880,662

PORCELAIN MIX FOR DENTAL APPLIANCES

Leonard G. Daskalon, Orange, Conn.; Constantine I. Courduvelis, Athens, Greece, and Theodore Koukos, West Haven, Conn., assignors to B.D.K. Ltd., Inc., New Haven, Conn.

Filed Jan. 8, 1973, Ser. No. 321,833

Int. Cl. C09k *3/00*

U.S. Cl. 106—35 **8 Claims**

1. A fluid mix for use in coating metal members of a dental appliance to provide thereon, after firing to effect vitrification of the mix, an adherent porcelain covering on said base metal member, said mix being composed of dental porcelain powder in predominant amount and a transient organic liquid binding agent in sufficient amount to render said mix of thixatropic, viscous consistency which adheres well to a dental applicance, said liquid binding agent consisting of from 0 to 95 percent by weight water, the balance being an organic liquid from the group consisting of 1,3-propanediol, 1,4-butanediol, 1,3-buntanediol, 1,3-methylpropanediol, 2,3-butanediol, 2,4-methylbutanediol, pentaerythritol, 1,5-pentanediol, methoxyethoxy ethanol, butoxyethoxy ethanol, ethoxy ethanol, butoxy ethanol, bis-[2-methoxyethoxy ethyl] ether, and combinations thereof.

3,880,663

FLUOROBORATE GLASS EXHIBITING FLUORESCENCE AT 1.06 MICROMETERS

Robert R. Shaw, Sturbridge, and Elias Snitzer, Wellesley, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Jan. 11, 1973, Ser. No. 322,671

Int. Cl. C09k *1/06, 1/66;* **C03c** *3/28*

U.S. Cl. 106—47 Q **6 Claims**

1. A fluoroborate glass which exhibits fluorescence at a wavelength of 1.06 micrometers consisting essentially of about 98 weight percent of a host glass consisting essentially of 10 to 50 mol percent of B_2O_3, 25 to 45 mol percent of AlF_3 and 25 to 45 mol percent of PbF_2 and approximately 2 weight percent of NdF_3.

3,880,664

METHOD FOR EXTRUSION

Herbert C. Schulze, 2310 Mar E. St., Tiburon, Calif. 94920

Filed Aug. 5, 1971, Ser. No. 169,404

Int. Cl. C04b *7/02, 15/16*

U.S. Cl. 106—99 **4 Claims**

3. The method for forming concrete articles including: (1) mixing cement and water in a mixing zone; (2) mixing said mixture of cement and water with aggregate and fumed silica in a mixing zone; (3) placing the resultant mixture in a pressure forming device; (4) forcing the said resultant mixture, by pressure, into a shaped article; (5) removing said shaped article from the forming device; and (6) curing the article formed by said pressure forming device.

3,880,665

HARDENING WITH A HETEROCYCLIC CARBAMOYL AMMONIUM COMPOUND OF A PHOTOGRAPHIC MATERIAL CONTAINING A SILVER HALIDE LAYER

Wolfgang Himmelmann, Opladen, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

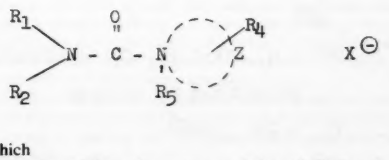
Filed May 21, 1973, Ser. No. 362,484

Claims priority, application Germany, May 24, 1972, 2225230; Apr. 7, 1973, 2317677

Int. Cl. G03c *1/30*

U.S. Cl. 96—111 **8 Claims**

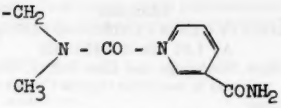
1. A process for providing a protein-containing binder selected from the group consisting of gelatin, casein and zein in a photographic silver halide emulsion layer coated on a support wherein the improvement comprises incorporating in a binder for the layer a hardening amount of a hardener of the formula



in which

R_1 is selected from the group consisting of alkyl, aryl and aralkyl groups,

R_2 is selected from the group consisting of alkyl, aryl, aralkyl groups and the methylene group substituted with a group of the formula



or R_1 and R_2 combined are poly-4-vinylpyridine,

R_5 is selected from the group of one and two alkyl groups and is not present when the nitrogen to which it is attached carries a double bond in the heterocyclic aromatic ring formed by substituted Z,

Z is a group required to complete a 5-membered or 6-membered heterocyclic aromatic ring which may include one or more condensed rings and one or more heteroatoms,

R_4 stands for

$-NR^6-CO-R^7$ R^6 = H, alkyl (1-4 C)

R^7 = H, alkyl (1-4 C)

= NR^8R^9

R^8, R^9 = H, alkyl (C_1-C_4)

$-(CH_2)_m-NR^{10}R^{11}$

R^{10} = $-CO-R^{12}$

R^{11} = H, alkyl (C_1-C_4)

R^{12} = H, alkyl (C_1-C_4)

R^{12} = $NR^{13}R^{14}$

R^{13} = alkyl (C_1-C_4), aryl

R^{14} = H, alkyl, aryl

m = 1 - 3

$-(CH_2)_n-CONR^{15}R^{16}$

R^{15} = H, alkyl (C_1-C_4) aryl

R^{16} = H, alkyl (C_1-C_4) or

R^{15} and R^{16} together represent the atomic grouping required to complete a 5-membered or 6-membered aliphatic ring,

n = 0 - 3

$-(CH_2)_p-\underset{\underset{R^{18}}{|}}{\overset{Y}{|}}{CH}-R^{17}$

R^{17} = H, alkyl (C_1-C_4) optionally substituted by halogen

Y = -O-, $-NR^{19}-$

R^{18} = H, alkyl, $-CO-R^{20}$, $-CO-NHR^{21}$

R^{19}, R^{20}, R^{21} = H, alkyl (C_1-C_4)

p = 2 - 3

poly-4-vinyl-N,N-dimethyl-carbamoyl-pyridinium chloride having molecular weight of about 10,000.

3,880,666

PIGMENT COMPOSITION

Robert K. Remer, Evanston, Ill., assignor to Hu'l-Smith Chemicals, Inc., Des Plaines, Ill.

Continuation of Ser. No. 129,603, March 30, 1971, abandoned. This application Aug. 29, 1973, Ser. No. 392,671

Int. Cl. C08h *17/14*; **C09c** *1/48*

U.S. Cl. 106—288 Q **15 Claims**

1. A composition consisting essentially of a mixture of a finely divided water insoluble polyvalent metal salt of dithiocarbamate and a colorant uniformly disposed therein.

3,880,667

DIFFUSION TOWER FOR EXTRACTING PARTICULATE MATERIAL

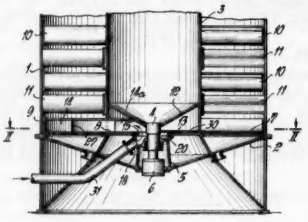
Elmar Straube, Bedburg, Germany, assignor to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft, Grevenbroich, Germany

Filed Aug. 28, 1973, Ser. No. 392,186

Claims priority, application Germany, Sept. 1, 1972, 2243168

Int. Cl. C13d *1/12*

U.S. Cl. 127—7 **11 Claims**



1. In a diffusion tower for extracting particulate material, particularly sugar-beet chips, a combination comprising an upright outer tubular element, and a rotatable inner tubular element concentric with said outer element and defining therewith an annular extraction chamber, both of said elements having lower end regions; a screen bottom in said chamber at ssid lower end regions; a particle distributor rotatable with said inner tubular element above and in wiping contact with said screen bottom, said distributor having a channel with an open lower portion which communicates directly with said screen bottom so that particles entering said chamber through said channel are distributed evenly upon said previously wiped screen bottom; a bottom plate provided on said inner tubular element above said screen bottom, said bottom plate being rotatable with said inner tubular element and having a cutout which communicates with said channel; a casing at said lower end regions and defining an annular inner space which communicates with said cutout; and an inlet for particles which communicates with said inner space.

3,880,668
APPARATUS FOR PRODUCING MOLASSES FOOD PRODUCT

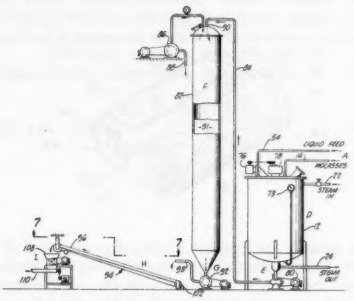
Roger E. Miller, Lakewood, Calif., assignor to Western Consumers Industries, Inc., Paramount, Calif.

Division of Ser. No. 241,296, April 5, 1972, abandoned. This application Mar. 13, 1974, Ser. No. 450,901

Claims priority, application South Africa, Jan. 9, 1973, 73/0148; Canada, Jan. 9, 1973, 160845; Mexico, Jan. 26, 1973, 141188

Int. Cl. B01d *1/22*; **C13f** *1/00*

U.S. Cl. 127—9 **10 Claims**



1. An apparatus for dehydrating molasses and like liquids comprising:
   a. a container having heated walls;
   b. deposition means for continuously depositing a film of molasses or like liquids on the heated walls of said container;
   c. agitator means for agitating the film and for urging the molasses or like liquid against the heated walls of said container;
   d. a vacuum chamber maintained at a partial vacuum operatively interconnected with said container;
   e. metering means for continuously transferring the molasses or like liquid from said container to said vacuum chamber at a controlled rate; and
   f. cooling means for cooling the molasses or like liquid, including transfer means for transferring the liquid from said vacuum chamber to said cooling means.

3,880,669
PROCESS FOR MAKING AN ELECTRODE BEARING PLASTIC STRIP

John M. Bilhorn, Edgerton, Wis., assignor to ESB Incorporated, Philadelphia, Pa.

Filed Apr. 22, 1974, Ser. No. 462,964

Int. Cl. H01m *39/06*

U.S. Cl. 136—10 **6 Claims**

1. A method for making an electrode bearing, electronically conductive, ionically non-conductive material, which method comprises:
   a. preparing a solution comprising electronically conductive plastic resin and a solvent therefor;
   b. casting said solution into an electronically conductive solvent containing plastic strip;
   c. preparing an electrode mix comprising electronically conductive plastic resin, a solvent therefor, and electrode material;
   d. physically contacting said plastic strip with said electrode mix, wherein the solvent in each of the plastic strip and the electrode mix is a solvent for the plastic resin of both the plastic strip and the electrode mix thus effecting both a physical-chemical interaction and an intimate electronic contact between the surfaces of the plastic strip and the electrode mix as a result of the mutual solvency of the plastic resins in said surfaces; and
   e. removing substantially all solvent therefrom.

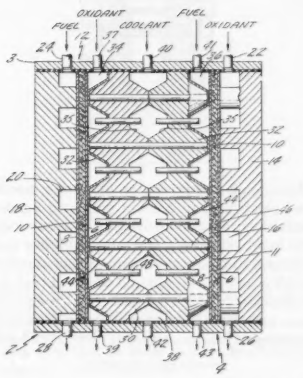
3,880,670
ELECTROCHEMICAL CELL SEPARATOR PLATE MEANS

Byron H. Shinn, Ormond Beach, Fla., assignor to United Aircraft Corporation, Hartford, Conn.

Filed July 2, 1973, Ser. No. 375,972

Int. Cl. H01m *27/02*

U.S. Cl. 136—86 R **5 Claims**



1. An electrochemical cell system, comprising:
a housing;
a first cell in said housing including a first reactant gas electrode and a second reactant gas electrode, said first electrode being spaced from said second electrode by an electrolyte compartment;
a second cell in said housing including a first reactant gas electrode and a second reactant gas electrode, said first electrode being spaced from said second electrode by an electrolyte compartment;
polymer separator plate means disposed between said first cell and said second cell and being non-electrically and non-thermally conductive, said polymer separator plate means having a first surface adjacent said first cell and a second surface adjacent said second cell, said separator plate means forming a first reactant gas compartment with said first cell, and a second reactant gas compartment with said second cell, and said separator plate means further defining a coolant compartment therein having an inlet and outlet and being isolated from said first and second gas reactant compartments by said non-conductive polymer separator plate means;
a thin layer of electrically and thermally conductive material disposed upon said first surface and having at least a portion of said layer in contiguous relationship with said first cell;
a thin layer of electrically and thermally conductive material disposed upon said second surface and having at least a portion of said layer in contiguous relationship with said second cell; and

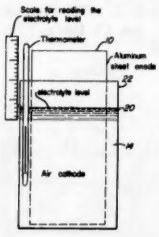
pin means comprising a plurality of first pins disposed in said polymer separator plate means and extending from said coolant compartment to at least one of said reactant gas compartments for providing a thermal path therebetween, said pin means also providing an electrical path from said first cell to said second cell.

3,880,671

CORROSION INHIBITOR SYSTEM FOR ALKALINE ALUMINUM CELLS

Karl V. Kordesch, Lakewood, and Akiya Kozawa, Middleburg Heights, both of Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed Oct. 26, 1972, Ser. No. 301,110
Int. Cl. H01m *11/00*
U.S. Cl. 136—100 R **15 Claims**



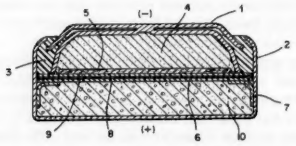
1. A galvanic cell comprising an aluminum anode, a cathode, and an electrolyte in contact with said anode and said cathode, said electrolyte comprising an aqueous solution of an alkali metal hydroxide and a corrosion inhibitor system in an amount effective to inhibit corrosion of said aluminum anode when said cell is on open circuit and when said cell is discharging, said corrosion inhibitor system comprising (a) an alkali metal citrate, and (b) at least one compound selected from the group consisting of lead compounds and tin compounds.

3,880,672

BATTERY BARRIER AND BATTERY

El Sayed Megahed, and Randall W. Peters, both of Madison, Wis., assignors to ESB Incorporated, Philadelphia, Pa.

Filed Mar. 23, 1973, Ser. No. 344,192
Int. Cl. H01m *21/00*
U.S. Cl. 136—111 **16 Claims**



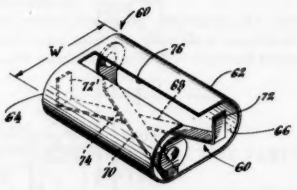
1. An electric battery comprising in combination
a. a positive electrode,
b. a negative electrode,
c. an alkaline electrolyte in contact with said electrodes, and
d. an organic barrier between said electrodes which barrier comprises an organic substrate at least one side of which has adhered thereto a paste-like mixture consisting essentially of a binder material and an inorganic material in a dispersing medium wherein the surface density of the inorganic material in the mixture of (d) is from about 0.01 to about 7.00×10^{-3} g/cm^2 of active electrode surface area and wherein the inorganic material of (d) is selected from the group consisting of titanium dioxide, zirconium dioxide, aluminum sulfate, aluminum chloride, aluminum oxide, barium chloride and chromium chloride.

3,880,673

ADAPTER FOR HIGH VOLTAGE ELECTROCHEMICAL CELL

Carl F. Buhrer, Framingham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 12, 1973, Ser. No. 340,421
Int. Cl. H01m *1/00*
U.S. Cl. 136—173 **2 Claims**



1. An adapter for parallel electrical connection of high electrical voltage cells having positive and negative electrodes at opposite front and rear located ends and being oriented in parallel adjacent relationship with electrodes of opposite polarity at each end of the combinded parallel arranged cells, comprising: a thin flexible insulating sleeve for housing the cells, the sleeve further including first and second axial ends adapted to be aligned with the ends of the combined parallel arranged cells, the first end being closed and the second end being formed witn an opening, and being formed with a slot substantially extending axially along a first side of the sleeve, the slot adapted to form an opening through which the cells are inserted into the sleeve; and

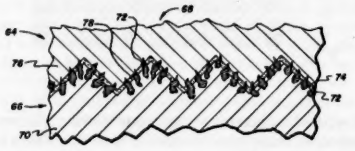
first and second electrically separated conductive elements located within the sleeve, the elements each including a segment on each end of the elements for making contact with an electrode of a cell, the elements extending in opposite diagonal directions within the sleeve from the first to the second ends of the sleeve such that the first element connects the positive electrodes of the cells and the second element connects the negative electrodes of the cells, the elements being generally adjacent the inner surface of a side of the sleeve opposite to the first side.

3,880,674

THERMOELECTRIC ELEMENTS AND DEVICES AND PROCESS THEREFOR

Richard C. Saunders, Simi, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 4,377, Jan. 20, 1970, Pat. No. 3,707,429.
This application Apr. 5, 1972, Ser. No. 241,476
Int. Cl. H01v *1/04*
U.S. Cl. 136—237 **9 Claims**



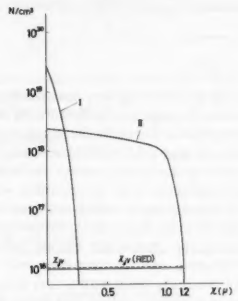
1. A thermoelectric device comprising a thermoelectric body bonded to a conductive body with a barrier layer therebetween, the material bonding said bodies consisting essentially of conductive granules penetrating said barrier layer

thereby forming low resistance conductive paths between said bodies through said barrier layer, said granules being firmly embedded at one end thereof in substantially V-shaped grooves present in the facing surface of said thermoelectric body, said V-shaped grooves being disposed in a substantially concentric circular configuration, the barrier layer and conductive body conforming to the grooved configuration in the face surface of said thermoelectric body.

3,880,675
METHOD FOR FABRICATION OF LATERAL TRANSISTOR

Yasuo Tarui Higashi-Kurume; Yoshio Komiya Tanashi, and Hiroo Teshima, Mitaka, all of Tokyo, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Sept. 18, 1972, Ser. No. 289,777
Claims priority, application Japan, Sept. 18, 1971, 46-72167
Int. Cl. H01l *7/54*
U.S. Cl. 148—1.5 **11 Claims**

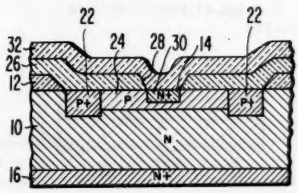


9. The method of claim **6** wherein the diffusion region of Step K is formed by P^+ diffusion.

3,880,676
METHOD OF MAKING A SEMICONDUCTOR DEVICE

Edward Curtis Douglas, Princeton; Chung Pao Wu, Cranbury, and Charles William Mueller, Princeton, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 29, 1973, Ser. No. 410,548
Int. Cl. H01l *7/54*
U.S. Cl. 148—1.5 **8 Claims**



1. In a method of making a semiconductor device wherein dopant atoms are ion implanted into a semiconductor material through a portion of a surface thereof, defined by one material the improvement comprising the steps of:

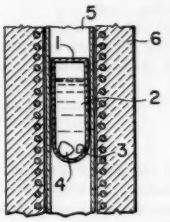
depositing a layer of a capping material, impenetrable to said dopant atoms by thermal diffusion, on said portion of said surface after said dopant atoms are ion implanted, said capping material being etchable by an etchant to which said one material is resistant, and

annealing said device, whereby out diffusion and evaporation of said dopant atoms through said portion of said surface are prevented.

3,880,677
METHOD FOR PRODUCING A SINGLE CRYSTAL OF $IN_xGA_{1-x}P$

Jun-Ichi Nishizawa; Ken Suto, and Yasuo Okuno, all of Sendai, Japan, assignors to Zaidan Hojin Handotai Kenkyu Shinkokai, Sendai-shi, Japan

Filed Dec. 27, 1972, Ser. No. 318,884
Int. Cl. H01l *7/38*
U.S. Cl. 156—624 **10 Claims**



1. A method for producing a single crystal of $In_xGa_{1-x}P$ wherein $0<1-x<0.9$, comprising the steps of:

preparing an In melt;

introducing P so that its mole ratio to In in the melt is less than about 0.2 into the In melt;

introducing Ga whose mole ratio to P in the In melt is between $\frac{1}{2}(1-x)M_P$ and $2(1-x)M_P$ wherein M_P is mole ratio of P to In in the In melt, into the In melt;

heating the In melt including P and Ga at a temperature higher than a solidus temperature of a single crystal of $In_xGa_{1-x}P$ to be obtained, for a period of from about 10 hours to about 20 hours; and

cooling the resultant In melt to room temperature at a cooling rate of about 2°C/hour to about 50°C/hour.

3,880,678
PROCESSING COPPER BASE ALLOY

Stanley Shapiro, New Haven, and Derek E. Tyler, Cheshire, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Mar. 27, 1974, Ser. No. 455,235
Int. Cl. C22f *1/08*
U.S. Cl. 148—11.5 R **8 Claims**

1. A method of improving the stress corrosion resistance of a stress corrosion susceptible copper base alloy without substantial degradation of desirable mechanical properties, said copper base alloy consisting essentially of from 5 to 20 percent manganese, from 15 to 35 percent zinc, balance copper which comprises: providing said alloy in the wrought condition; finally forming said alloy into a desired shape; and heat treating said finally formed alloy at a temperature of from 300° to 385°C for from 15 minutes to 4 hours, with no further forming operations being performed after said heat treatment step.

3,880,679
METHOD OF FORMING ZINC-ALUMINUM ALLOYS WITH GOOD MACHINABILITY

Edouard Gervais, Montreal, Quebec, and Pierre Chollet, Pierrefonds, Quebec, both of Canada, assignors to Noranda Mines Limited, Toronto, Ontario, Canada

Division of Ser. No. 250,557, May 5, 1972, Pat. No. 3,798,028. This application Sept. 10, 1973, Ser. No. 395,433
Claims priority, application Canada, July 21, 1971, 118722
Int. Cl. C21d *1/44*
U.S. Cl. 148—13.1 **6 Claims**

1. A method of heat treating a zinc-aluminum alloy having a zinc-aluminum eutecoid transformation comprising

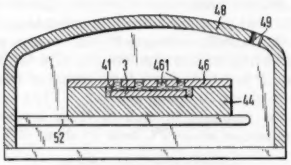
preparing a zinc-aluminum alloy consisting essentially of about 0.01 to about 3% bismuth, about 0.01 to 1% magnesium and, 0 to about 10% copper, the balance, apart from incidental impurities, being zinc and aluminum, wherein the ratio of magnesium to bismuth is such as to provide sufficient magnesium to combine with substantially all the bismuth in the form of the intermetallic compound Bi_2Mg_3, and

homogenizing said alloy at a temperature below the solidus temperature and above the eutectoid temperature of the alloy and then cooling the alloy to room temperature.

3,880,680
LIQUID PHASE EPITAXIAL PROCESS

Claus Weyrich, Gauting, and Günter Winstel, Ottobrunn, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 27, 1973, Ser. No. 401,414
Claims priority, application Germany, Sept. 28, 1972, 2247710
Int. Cl. H01l *7/38*
U.S. Cl. 148—171 **9 Claims**

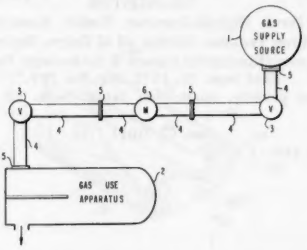


1. A process for epitaxially growing a layer on the surface of a substrate which includes bringing melt material which includes gallium into contact with the surface of said substrate at a low temperature of approximately 29°C gradually raising the temperature of the melt to a high temperature, wherein some substrate material is dissolved in the melt, and thereafter reducing the temperature of the melt, thereby causing the dissolved material to be redeposited on said substrate, the thickness of melt at said high temperature being maintained between predetermined upper and lower limits by a cover of material inert to said melt, said upper limit being not greater than the length of the diffusion distance over which said dissolved material can cover during the period when the temperature decreases for the epitaxial growth.

3,880,681
METHOD FOR THE TRANSFER OF A GAS OF HIGH PURITY

Gaston Sifre, Orsay, and René Barandon, Morangis, both of France, assignors to Societe Generale de Constructions Electriques et Mecaniques (Alsthom), Paris, France

Filed May 25, 1972, Ser. No. 256,765
Claims priority, application France, May 27, 1971, 71.19398
Int. Cl. H01l *7/00;* **C23g** *1/08;* **B08b** *9/06*
U.S. Cl. 148—175 **9 Claims**



1. A method for transferring very pure use gas from a supply to a user apparatus through tubing fitted with valves and other distributing and control elements for regulating the flow and pressure of said use gas, said method comprising:

chemically etching the tubing, valves and other distributing and control elements prior to assembly with an aqueous solution of volatile acids which are free from impurities which might be introduced into the use gas;

decontaminating the chemically etched tubing, valves and other distributing and control elements so formed by extensively sweeping them with a very pure sweeping gas;

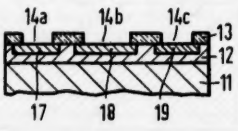
assembling said tubing, valves and other distributing and control elements together; and

passing said very pure use gas from said supply to said user apparatus through the thus etched and decontaminated tubing.

3,880,682
METHOD OF SIMULTANEOUS DOUBLE DIFFUSION

Wolfgang Müller, Vatterstetten, and Joachim Dathe, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Division of Ser. No. 114,760, Feb. 12, 1971, Pat. No. 3,764,412. This application June 20, 1973, Ser. No. 371,771
Claims priority, application Germany, Feb. 16, 1970, 2006994
Int. Cl. H01l *7/38, 7/44*
U.S. Cl. 148—175 **1 Claim**



1. A process of doping a silicon crystal by indiffusion, which comprises producing epitaxially a layer of one conductance type on a wafer shaped silicon monocrystal of another conductance type, coating said epitaxial layer with a layer of SiO_2, etching at least two windows through the SiO_2 layer which open onto the epitaxial layer, producing an SiO_2 doping layer, containing boron or phosphorus as dopant, using pure oxygen as oxidation means with neither the boron nor phosphorus indiffusing into the underlying silicon, covering the dopant containing layer in at least one window with a pyrolytically

produced SiO_2 layer, opening at least one window to the underlying semiconductor surface, while the dopant containing SiO_2 layer remains at least in another window, and bringing a dopant substance of opposite type from the gas phase through the opened window, and heating the doped device so that indiffusion also takes place from the dopant containing SiO_2 layer covered windows into the underlying epitaxial layer.

3,880,683

CASTABLE HIGH EXPLOSIVE OF CYCLOTETRAMETHYLENETETRANITRAMINE AND DODECENYL SUCCINIC ANHYDRIDE-VINYL CYCLOHEXENE DIOXIDE POLYMER BINDER

Wallace E. Voreck, and James R. Sides, both of Asheville, N.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 13, 1963, Ser. No. 323,515
Int. Cl. C06b *15/02*
U.S. Cl. 149—19.5 **5 Claims**

1. A castable explosive composition having a polymerized plastic binder consisting essentially of the following constituents:

Constituent:	Per Cent By Weight
Cyclotetramethylenetetranidimension within the range of 58 to 400 microns	
Polymerized plastic binder said polymerized plastic binder consisting essentially of:	16

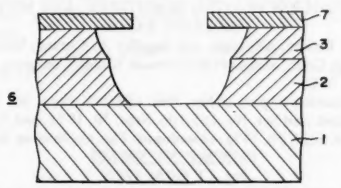
Constituent:	Per Cent By Weight
Vinylcyclohexene dioxide	10.6
dodecenyl succinic anhydride	5.4.

3,880,684

PROCESS FOR PREPARING SEMICONDUCTOR

Haruhiko Abe, Takarazuka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 3, 1973, Ser. No. 385,273
Int. Cl. H01l *7/50*
U.S. Cl. 156—8 **9 Claims**



1. A process for preparing a semiconductor comprising a base layer, a first silicon compound membrane having a first etching coefficient formed on the base layer and a second silicon compound membrane having a second etching coefficient lower than the first etching coefficient formed on the first silicon compound membrane comprise the steps of

slope etching to a first extent the first silicon compound membrane having a first etching coefficient using a fluorohydrocarbon or fluorochloro hydrocarbon gas plasma and

slope etching to a second extent greater than the first extent the second silicon compound membrane have a second etching coefficient lower than the first etching coefficient using the same fluorohydrocarbon or fluorochloro hydrocarbon gas plasma

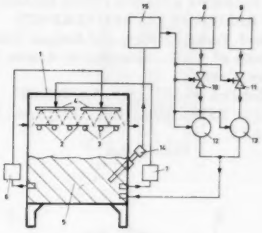
whereby undercutting is prevented.

3,880,685

PROCESS AND APPARATUS FOR ETCHING COPPER AND COPPER ALLOYS

Alfred Rehm, Villingen, Black Forest, and Winfried Eggert, Oberstadion, both of Germany, assignors to Hans Hoellmueller Maschinenbau, Gueltstein, Germany

Filed Nov. 5, 1969, Ser. No. 874,100
Claims priority, application Germany, Nov. 7, 1968, 1807414
Int. Cl. C23b *3/00*
U.S. Cl. 156—19 **4 Claims**



1. A method for continuously etching copper conductive plates which comprises contacting the copper conductive plate to be etched with an etching solution of cupric chloride (copper (II) chloride) and regenerating the etching solution containing cuprous chloride (copper (I) chloride) formed in the etching by reaction between said copper conductive plate and said etching solution by introducing hydrogen peroxide and hydrochloric acid into said etching solution, the amounts of hydrogen peroxide and hydrochloric acid introduced being regulated by continuously measuring the redox potential of said etching solution by means of a redox electrode and automatically introducing said hydrogen peroxide and hydrochloric acid whenever the cuprous ion (Cu(I)) concentration in said etching solution exceeds 4 g/l in an amount at least sufficient to reduce said cuprous ion (Cu(I)) concentration below said value whereby the cuprous ion concentration is continuously maintained below said value and a constant etching speed is maintained.

3,880,686

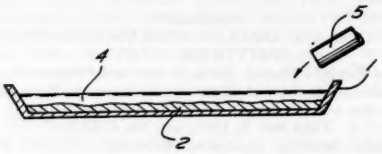
SIMULATED PAINTING WITH BRUSH OR PALETTE-KNIFE STROKES, AND METHOD OF MAKING THE SAME

Jerrold Robinson, Scarsdale, N.Y., assignor to The Dimension Weld International Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 334,365, Feb. 21, 1973, abandoned, Continuation-in-part of Ser. No. 342,322, March 16, 1973, abandoned. This application Aug. 9, 1973, Ser. No. 387,202
Int. Cl. B44c *3/02*
U.S. Cl. 156—59 **6 Claims**

1. A method of making a painting having simulated brush strokes or palette-knife strokes, comprising the steps of providing a painting having brush strokes or palette-knife strokes; directly taking of said painting a silicone rubber mold having the strokes thereon in form of corresponding recesses; placing a sheet of transparent themoplastic sheet material over a printed reproduction of said painting; and forming said sheet at elevated temperature and under application of pressure in

a said mold with raised replicas of said strokes while sealing said sheet to said printed reproduction, thereby producing a



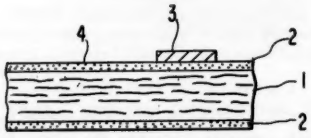
simulated painting having raised replicas of said strokes formed on said sheet.

3,880,687

METHOD OF MAKING A WOOD FIBER BOARD HAVING A RELIEF-TEXTURED SURFACE

Armin Elmendorf, Portola Valley, and Roland Etzold, Mountain View, both of Calif., assignors to Armin Elmendorf, Portola Valley, Calif.

Filed Oct. 4, 1972, Ser. No. 295,067
Int. Cl. B29j *5/00*; **B32b** *21/00, 31/32*; **D21j** *1/00*; **B32b** *3/00*
U.S. Cl. 156—62.2 **11 Claims**



1. The method of making a relief-textured surface on a wood fiber board comprising the steps of: creating areas on at least one side of the board with the use of initially loose wood particles with certain of such areas being harder than adjacent softer areas and all areas lie in the same plane, abrading the entire surface, thereby removing fibers primarily from the softer areas and keeping the harder areas substantially flat in a plane outwardly of the softer areas.

3,880,688

METHOD AND APPARATUS FOR THE CONTINUOUS PRODUCTION OF RING-SHAPED PIECES OF REINFORCED RUBBER

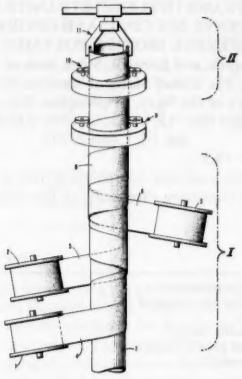
Giovanni Calori, Milan, and Vincenzo Benatti, Ospitaletto, both of Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed Mar. 2, 1972, Ser. No. 231,330
Claims priority, application Italy, Mar. 1, 1971, 21179/71
Int. Cl. B60c *9/00*; **B65h** *81/04*
U.S. Cl. 156—190 **8 Claims**

1. A continuous method for the production of ring-shaped pieces of reinforced rubber comprising

continuously moving in a rectilinear vertical direction a plurality of continuous endless chains, each continuous endless chain being wound at least upon one pair of rollers rotatably mounted upon a fixed cylindrical support, the axis of which is vertical and cantilevered in correspondence with its lower end, said chains being arranged around said cylindrical support angularly offset by the same angle with respect to each other;

providing a plurality of sectors which are movable along said support in said rectilinear vertical direction; continuously winding at least one rubber band of a band reel, provided with reinforcing elements, by revolving said reel around said axis of the cylindrical support in a substantially horizontal plane, to obtain a tubular body of indefinite length, each of said continuous endless chains being provided with drag means adapted to support and move each of said sectors substantially in said vertical rectilinear direction;



longitudinally guiding said sectors on said cylindrical support as they move along the cylindrical support; and

intermittently cutting said tubular body in correspondence with the upper end of said cylindrical support to obtain said ring-shaped pieces.

3,880,689

MAGNETIC DEVELOPER CONTAINING AN ELECTROLESS PLATING SENSITIZER, AND METHOD OF USING SAME

John H. Rolker, Altadena, and Bradley A. Carson, Monrovia, both of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. Nos. 185,109, Sept. 30, 1971, abandoned, and Ser. No. 185,106, Sept. 30, 1971, and Ser. No. 185,104, Sept. 30, 1971, abandoned. This application July 19, 1973, Ser. No. 380,801
Int. Cl. G03g *19/00*
U.S. Cl. 156—233 **14 Claims**

1. An improved method of developing magnetic images, said method comprising:

contacting a latent magnetic image on a magnetic record surface with an image developer comprising a magnetically attractable toner having a magnetic component and a nonmagnetic component, said toner being sensitized with a metallic electroless plating sensitizer comprising a compound of a metal selected from tin and metals of Group IB and VIII of the periodic table and mixtures thereof, capable of being reduced to an active metal constituent which is a catalyst for electroless plating, said contacting being effected for a time sufficient to develop said image; and

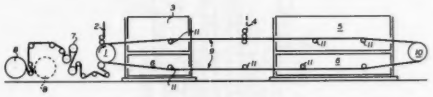
electrolessly plating said developed image to provide it with density and contrast.

3,880,690

PROCESS FOR THE MANUFACTURE OF CEMENTABLE POLYVINYL FLUORIDE SHEETING

Otto Fuchs, Hohlsteinstr. 44, 521 Troisdorf-Oberlar; Gerhard Bier, Alternratherstr. 2, 521 Troisdorf, and Werner Trautvetter, Hohlsteinstr. 50, 521 Troisdorf-Oberlar, all of Germany

Division of Ser. No. 96,876, Dec. 10, 1970, Pat. No. 3,709,776.
This application July 14, 1972, Ser. No. 271,897
Claims priority, application Germany, Dec. 12, 1969, 1962329
Int. Cl. C09j 5/02; B32b 31/00
U.S. Cl. 156—242 5 Claims



1. In the process of producing laminated polyvinyl fluoride film or sheeting by solvent or dispersion casting of polyvinyl fluoride in film or sheeting form; removing only a portion of the solvent or dispersant therefrom to a residual content of 0.4 to 0.8 wt.%, applying a solution or dispersion of an adhesive to said film or sheeting and removing substantially all of the solvent and dispersants and, thereafter, laminating the so treated polyvinyl fluoride film or sheeting to another material, the improvement which comprises utilizing as said solution or dispersion of adhesive a solution or dispersion of adhesive consisting essentially of a post-chlorinated polyvinyl fluoride having a chlorine content of 5 to 27 wt.% or a solution or dispersion of an adhesive which consists essentially of a copolymer of vinyl fluoride and 10 to 65 wt.% vinyl chloride.

3,880,691

PROCESS FOR PRODUCING FILM AND SHEET MATERIALS FROM THERMOPLASTIC MATERIALS HAVING HOT TACK BY THE BLOWN FILM PROCESS AND THE FILM AND SHEET MATERIALS THEREBY OBTAINED

Heinrich Pannenbecker, Bergstrasse 23, Bonn-Holzlar, and Rudolf Plate, Quellenweg 6, Bonn-Ippendorf, both of Germany

Filed Mar. 20, 1972, Ser. No. 236,297
Claims priority, application Germany, Mar. 23, 1971, 2114065
Int. Cl. B29f 3/10; B29d 23/03
U.S. Cl. 156—244 18 Claims

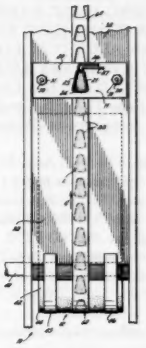
1. A process for production of film of hot-tacky thermoplastic material by the blown film process, which material is tacky to the extent that in production thereof by the blown film process, wherein a tube of the material is independently extruded, the extruded tube is inflated and thereafter flattened with squeeze rollers so that walls of the tubing are superimposed, the superimposed walls become bonded together, which comprises extruding two tubes, one outside the other to produce a two ply tube comprising an inner ply and an outer ply, inflating the two ply tube, and thereafter flattening the two ply tube with squeeze rollers, and removing the flattened two ply tube from the squeeze rollers, the outer ply being said hot-tacky thermoplastic material, and the inner ply being a tack-free thermoplastic material.

3,880,692

WEB HANDLING APPARATUS AND METHOD

Dale Jeffries, Santa Monica, Calif., assignor to R. A. Jones and Company Incorporated, Covington, Ky.

Filed Dec. 18, 1972, Ser. No. 315,854
Int. Cl. B32b 31/18; B65c 9/24
U.S. Cl. 156—261 20 Claims



1. Apparatus for applying labels of varying shapes and sizes from a prepared label supply to a product wherein the label supply includes a prepared elongated web comprising a web remnant supporting a plurality of removable labels throughout its operable length, and wherein said apparatus is of the type which includes means for establishing a tacky surface to labels within the web, reciprocating plunger means at a detaching station for driving through the web when the web is substantially stationary to detach a label from the web, and for applying said label to a product, and means at the detaching station for holding said web remnant stationary during removal of a label therefrom, the improvement wherein

said means for establishing a tacky surface to labels includes means for applying a hot melt adhesive to label surfaces comprising portions of one side of said web, and

wherein said means for holding said web remnant stationary includes heated web engaging means for engaging said one side of the web adjacent the label surfaces to which hot melt adhesive has been applied in order to resist accumulation of said hot melt adhesive on said holding means.

3,880,693

PROCESS FOR BONDING TOGETHER FILMS BASED ON CURED BUTYL RUBBER, POLYCHLOROPRENE AND/OR RUBBER-LIKE COPOLYMERS OF ETHYLENE, AT LEAST ONE OTHER ALPHA-ALKENE AND, OPTIONALLY, ONE OR SEVERAL POLYENES

Pierre M. G. J. Urlings, Sittard, and Marinus J. R. Visseren, Geleen, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Apr. 26, 1973, Ser. No. 354,908
Claims priority, application Netherlands, Apr. 26, 1972, 7205623
Int. Cl. B29h 8/00; C09j 3/12
U.S. Cl. 156—273 14 Claims

1. In a process for bonding together cured films of a rubbery polymer selected from the group consisting of polychloroprene, butyl rubber, rubbery copolymers of ethylene with at least one other alpha-alkene of 3 to 8 carbon atoms, and mixtures thereof, by placing between the films to be bonded a layer of a curable rubbery polymer and thereafter heating the assembly of films under a pressure of at least 1 kgs/cm^2,

the improvement comprising using a curable rubbery polymer composition which generates heat upon exposure to a high frequency electric field, and heating the assembly of films in an electric field having a frequency of about 0.1 to about 500 megacycles per second for a time at least sufficient to cure the curable rubbery polymer.

3,880,694

METHOD OF BONDING USING RAPID CURING RESIN COMPOSITIONS COMPRISING THE REACTION PRODUCT OF AN ALDEHYDE CONDENSATION POLYMER WITH A PRIMARY AROMATIC AMINE FURTHER REACTED WITH A CURING AGENT

Harlan G. Freeman; Gene F. Baxter, and George Grahm, all of Seattle, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Division of Ser. No. 174,942, Aug. 25, 1971, Pat. No. 3,784,515, which is a continuation-in-part of Ser. No. 113,681, Feb. 8, 1971, abandoned, which is a continuation-in-part of Ser. No. 821,996, May 5, 1969, abandoned, which is a continuation-in-part of Ser. No. 639,270, May 18, 1967, Pat. No. 3,518,159. This application Oct. 23, 1973, Ser. No. 408,406

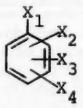
Int. Cl. C09j *5/00;* **C08g** *9/32, 9/06*

U.S. Cl. 156—331 **27 Claims**

1. A method of bonding two members one to the other comprising

1. applying to at least one of said members a rapid curing, liquid adhesive composition comprising

a. the reaction product of an aldehyde condensation polymer containing reactive alkylol groups with a primary aromatic amine of the formula



wherein X_1 is $-NH_2$ or $-CH_2NH_2$; X_2 is $-NH_2$, $-CH_2NH_2$ or $-OH$; X_3 is $-NH_2$, $-CH_2NH_2$, $-NO_2$, $-OH$, alkyl of 1 to 5 carbon atoms, hydrogen, halogen, halogenated alkyl, alkyoxy or

X_4 is hydrogen, alkyl of 1 to 4 carbon atoms or aryl; and A is $-SO_2-$, $-NH-$, $-O-$, $-S-$, $-C\equiv C-$, $-S-S-$, $-N=N-$ or

where Y_1 and Y_2 are hydrogen or alkyl of 1 to 3 carbon atoms and z is 0, 1 or 2, the amount of said amine being at least 0.05 part by weight per part of said aldehyde condensation polymer; said aldehyde condensation polymer being selected from the group consisting of phenoplasts, aminoplasts, and ketone-aldehyde condensation polymers prepared from a monofunctional aldehyde or a polyfunctional aldehyde having at least two aldehyde groups separated by no more than one carbon atom; and

b. a curing agent reactable with said reaction product at ambient temperatures, the amounts of said reaction product and curing agent being sufficient to cause said composition to rapidly become insoluble and infusible at ambient temperatures;

2. assembling said members with said liquid adhesive composition therebetween; and

3. maintaining the members so positioned until curing of said composition has occurred.

3,880,695

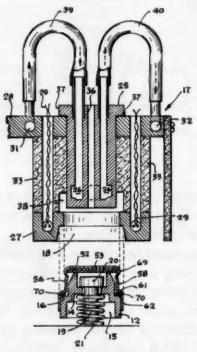
APPARATUS FOR BONDING SEALING RING TO A CLOSURE

Wendell Evert Standley, Lake Forest, Ill.; Norman David Adams, Libertyville, Ill., and David Allen Phelps, Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Oct. 30, 1972, Ser. No. 302,311

Int. Cl. B30b *15/34*

U.S. Cl. 156—423 **8 Claims**



1. Apparatus for bonding a sealing ring to a closure cap having a crown and depending wall, said apparatus comprising:

a mandrel conforming to the internal configuration of said crown and depending wall of said closure cap to be handled and including a shoulder on its periphery for receiving and supporting said sealing ring adjacent to said depending wall of said closure cap prior to the bonding of said sealing ring to said closure cap; and

a workhead including a die conforming to the external configuration of said closure cap, a floating spool positioned above said die in a manner such that said crown of said closure cap engages the bottom of said spool when said closure cap is inserted in said die, said spool movable in an axial direction and having a passageway therein for the entry and exit of cooling fluid, a heated block coextensive with and surrounding said die, insulating blocks between and abutting said spool and heated block, and a clearance space above said die for receiving said crown of said closure cap when said closure cap is inserted into said die;

whereby said mandrel supports said closure cap and sealing ring during bonding of said sealing ring to said depending wall of said closure cap and said workhead provides appropriate heated and cooled zones so that heat can be applied to said depending wall as required for bonding said sealing ring to said depending wall, while maintaining said crown of said closure cap cool.

3,880,696

MACHINE FOR THE MANUFACTURE OF TAPE BY A WINDING METHOD

Heng Taan Chen, San Gabriel, Calif., assignor to Jan Vetrovec, San Gabriel, Calif., a part interest

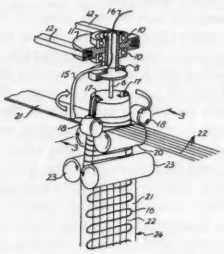
Filed Aug. 6, 1973, Ser. No. 386,183

Int. Cl. B65h *81/00;* **B32b** *5/26*

U.S. Cl. 156—428 **5 Claims**

1. A machine for manufacture of a fiber reinforced tape having longitudinal fibers and transverse fibers by a winding method comprising:

a thread receiving body having a circular portion thereon;
a pair of belt conveyors mounted on opposite sides of the body;
means for moving the belt conveyors along the length of the body;
means for winding a transverse thread around the circular portion of the body over the belt conveyors;
a first roller on one side of the body and rotatable about an axis transverse to the length of the body for feeding a

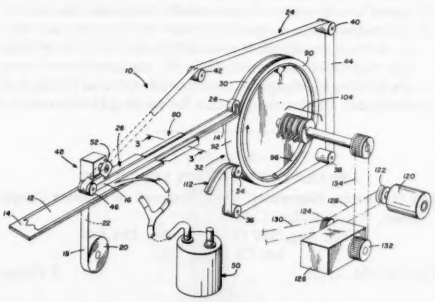


plurality of longitudinal threads along one side of the body;
a second roller on the other side of the body from the first roller and rotatable about an axis transverse to the length of the body for feeding a tape along the other side of the body; and
a pair of securing rollers at the opposite end of the body from the means for winding for pressing the tape, the transverse thread and the longitudinal threads together.

3,880,697
METHOD OF AND APPARATUS FOR MAKING BONDED BELT LOOPS

Joseph W. A. Off, and Darrel J. Wilbanks, both of Irving, Tex., assignors to Hagger Company, Dallas, Tex.

Filed Sept. 7, 1973, Ser. No. 395,227
Int. Cl. B31f *1/00*
U.S. Cl. 156—467 **12 Claims**

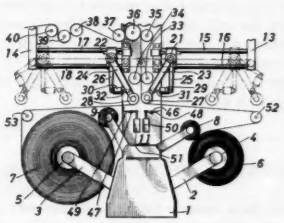


1. Apparatus for making bonded belt loops which comprises:
means for directing a strip of interfacing material having a thermally responsive adhesive layer on one side only thereof and a strip of belt loop material along a predetermined path with the reverse side of the belt loop material engaging the side of the interfacing material opposite the adhesive layer;
means positioned on opposite sides of the predetermined path for trimming the strip of belt loop material to a predetermined width;
means positioned on the path beyond the trimming means for folding the strip of belt loop material around the strip of interfacing material such that the belt loop material extends outwardly beyond the edges of the interfacing material and such that edges of the belt loop material are positioned in a spaced apart relationship in engagement with the thermally responsive adhesive layer on the interfacing material; and
rotating bonding drum means comprising a portion of the path extending beyond the folding means for applying heat to the adhesive layer in sufficient quantity to effect activation thereof and for simultaneously pressing the strip of belt loop material into engagement with the adhesive layer and thereby permanently bonding the strip of belt loop material to the strip of interfacing material;
the strip directing means includes an endless belt extending along the predetermined path for transporting both the strip of interfacing material and the strip of belt loop material through the trimming means, through the folding means, and around the bonding drum means.

3,880,698
CONTINUOUSLY FEEDING APPARATUS FOR ROLLED WEBS

Minoru Kawazura, Tokyo, and Shigeru Watai, Ichikawa, both of Japan, assignors to Toppan Containers Co., Ltd., Tokyo, Japan

Filed Nov. 3, 1972, Ser. No. 303,516
Claims priority, application Japan, Nov. 5, 1971, 46-10357
Int. Cl. B65h *19/18*
U.S. Cl. 156—504 **7 Claims**

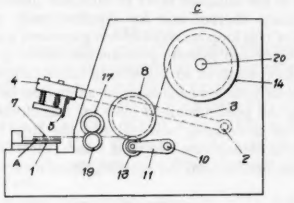


1. A continuously feeding apparatus for connecting the leading end of a ready rolled web to the terminal end of a running rolled web to continue the feeding of webs, comprising a pair of support arms mounted on a frame for supporting said rolled webs, a pair of guide rolls, a pair of swingable arms mounted on said frame for supporting each of said guide rolls, each of said guide rolls including a cylindrical tube having a plurality of aperatures on the peripheral wall thereof, the interiors of said tubes communicating with a vacuum source whereby said leading end may be adhered thereto so as to be held in position for connection to said terminal end, guide mechanism means including guide rails and motor means for horizontally shifting each of said swingable arms along said guide rails relative to said frame between an outside preparatory position where said leading end may be adhered to its respective guide roll and adhesive means applied to one side of said leading end and a central position where said guide rolls are adapted to be brought together to connect said leading end to said terminal end, and means for moving said swingable arms to move said guide rolls toward one another at said central position for pressing said leading end against said trailing end to effect a connection of said webs.

3,880,699
AUTOMATIC ADHESIVE TAPE FEEDING DEVICE

Kanichi Nishimoto, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Nakajima, Wakayama, Japan

Filed Sept. 7, 1973, Ser. No. 395,144
Int. Cl. B31f 5/00; G03d 15/04
U.S. Cl. 156—505 4 Claims



1. An apparatus for splicing two sections of flexible material comprising:

means for aligning and abutting an end of a first section with an end of a second section;

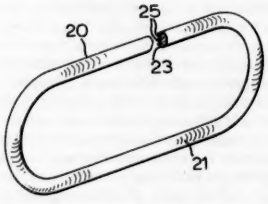
means for feeding a length of adhesive splicing tape to a position adjacent said ends, said feeding means comprising means for bending the tape along a longitudinal axis of the tape into a V-shaped configuration, said bending means comprising first and second roller members engaging said tape, said first roller member having a frustoconical-concave circumferential surface and said second roller member having a conical-convex circumferential surface, the circumferential surface of said first roller member being intermeshed with the circumferential surface of said second roller member to provide for contact between the splicing tape and said frustoconical-concave circumferential surface only along a central line of said frustoconical-concave surface; and

means for flattening and pressing said tape into intimate contact with said ends.

3,880,700
APPARATUS FOR APPLYING HANDLES TO PLASTIC BAGS

Avron Ritch; John Andrew Holub, and Frederick Arnold Mattis, all of Edmonton, Alberta, Canada, assignors to MacKenzie Trading Co. Ltd., Edmonton, Alberta, Canada

Filed June 28, 1973, Ser. No. 374,575
Claims priority, application Canada, May 15, 1973, 171585
Int. Cl. B32b 31/00; B31b 1/86
U.S. Cl. 156—514 10 Claims



1. Apparatus for applying plastic handles to tubular plastic bag stock, the apparatus comprising:

a drive mechanism adapted to feed the bag stock through the apparatus intermittently in discrete lengths, each one of said lengths corresponding to the length of a bag;

a combination cutting and welding mechanism including a float piece having parallel front and rear sides and adapted to be positioned inside the bag stock, and a double-acting head movable axially along a predetermined line of action;

means restraining the float piece in position with said sides at right angles to the line of action, the float piece remaining in a predetermined position as the bag stock is fed over said sides of the float piece by the drive mechanism, parts of the bag stock adjacent to and not in contact with one of said sides of the float piece being free to lie in face-to-face engagement with corresponding parts of the bag stock adjacent to and not in contact with the other of said sides of the float piece;

a handle transport mechanism adapted to feed pairs of handles to respective positions one at each of said sides of the float piece immediately adjacent respective outer sides of the bag stock with the handles disposed similarly about said line of action and in respective planes which are generally parallel to said sides of the float piece;

said combination cutting and welding mechanism being operable along said line of action when the bag stock is stationary, and further comprising: guide means coupled to the head to restrain the head to move axially along said line of action; actuator means coupled to the head for moving the head axially; heating elements coupled to the float piece; electrical contacts coupled electrically to the heating elements; a pair of platens in thermal engagement with the heating elements and having respective shapes corresponding to the shapes of said handles, the platens being located about said line of action so that upon heating the platens and energising said actuator to apply forces to press the sides of the bag stock between respective handles and platens, the respective bag stock sides and handles are welded to one another;

said double-acting head comprising: a cutter corresponding in shape to openings required in the bag sides inside the handles; an end piece slidably mounted for axial movement relative to the cutter; means adapted to bias the end piece outwardly relative to the cutter; and electrical connectors aligned axially with said electrical contacts;

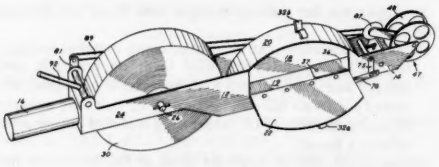
a back stop aligned with the end piece to provide reactive forces;

said actuator means being operable to move the double-acting head between a withdrawn position in which the head is clear of the bag stock and handles, and an extended position in which the cutter projects through both sides of the bag stock and the end piece and back stop apply compressive forces which hold the handles in contact with the bag sides so that the bag sides are then in thermal engagement with the platens to thereby weld the bag sides to the handles, the electrical connectors then being in engagement with the respective contacts to complete an electrical circuit for heating the platens.

3,880,701
APPARATUS FOR APPLYING TAPE

Billy N. Moree, Edgewater, Colo., assignor to Colwest Corporation, Wheat Ridge, Colo.

Filed Aug. 29, 1972, Ser. No. 284,588
Int. Cl. B44c 7/02
U.S. Cl. 156—526 3 Claims



1. A taping device for spreading an adhesive on one side of a continuous strip of tape and applying the tape to wall board or the like, the taping device comprising:

elongated frame means including an enclosed elongated reservoir for adhesive having a tape inlet and a tape outlet arranged at opposite ends of said resorvoir;

said reservoir having one straight wall and an opposed arcuate wall against which tape is placed prior to filling said reservoir with adhesive, said arcuate wall being arranged to extend continuously between said inlet and said outlet so as to concentrate the adhesive placed in the reservoir and said tape is in continuous contact with the adhesive in the reservoir, whereby the tape passing through the reservoir is completely coated by the adhesive;

support means for a roll tape mounted on said frame means adjacent to and in alignment with said reservoir whereby tape leaving said roll passes directly into said reservoir;

manipulating handle means extending outwardly from said support means;

adjustable gate valve means mounted at said tape outlet arranged to press against said arcuate wall with the tape passing therethrough having its uncoated side against said arcuate wall and to control the amount of adhesive on the opposite side of the tape;

one way release means adjacent the outlet of said reservoir for passing tape outwardly from said gate valve means to prevent inward movement thereof;

selectively operable lock means for temporarily locking said tape from travel from said gate valve means;

cut-off knife means movable to tape cutting position;

operating means adjacent said reservoir interconnecting said releasable lock means and said cut-off knife and arranged to initially actuate said selectively operable lock means and thereafter actuate said cut-off knife means; and

a pair of independent, freely rotatable tape applicator wheels mounted on the end of said frame means spaced from and independent of said cut-off knife means positioned to pass the adhesive coated side of tape to a wall and press the coated tape against the wall.

3,880,702

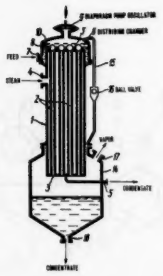
FILM TYPE EVAPORATOR

Boris Alexandrovich Troshenkin, ulitsa Bairona, 177, kv. 72; Galina Ilinichna Solovieva, ulitsa Ilicha, 11/13, kv. 32; Jury Nikolaevich Piskunov, ulitsa Pyatigorskaya, 11, kv. 12; Viktor Germanovich Ponomarenko, ulitsa Sverdlova, 155, kv. 23, and Ivan Mikhailovich Koval, pereulok Reshetilovsky, 14, all of Kharkov, U.S.S.R.

Filed June 29, 1973, Ser. No. 374,954

Int. Cl. B01d *1/22;* **E03b** ; **B01d** *1/00;* **F17d** ; **B01d** *11/00*

U.S. Cl. 159—13 A **5 Claims**



1. A film type evaporator comprising: a vertically extending heating chamber; an inlet for supply of a heating medium into said heating chamber; an outlet for discharge of condensate from said heating chamber; vertical heat transfer tubes accommodated within said heating chamber; horizontal plates enclosing said heating chamber and pierced to support said heat transfer tubes at their open tubes; a closed distributing chamber adapted to distribute a solution being treated among said heat transfer tubes, said distributing chamber being located in the upper part of said evaporator; an inlet for the supply of said solution into said distributing chamber; floating throttling means accommodated in the open upper ends of said tubes and adapted, when raised off said heat transfer tubes, to define with the inlets of said heat transfer tubes a plurality of gaps for the passage of said solution through said gaps in the form of a falling film from said distributing chamber into said heat transfer tubes; a diaphragm pump oscillator connected to the distributing chamber for effecting raising and lowering of said throttling means via vacuum pressure pulsations; limiting abutment baffle means mounted above said throttling means to limit the vertical movement thereof; a separator for separation of said solution from vapor and communicating with the lower ends of the tubes; conduit means connecting said separator with said distributing chamber for conveying vapor from said distributing chamber to said separator; an outlet for withdrawing the vapor of the liquid being evaporated from said separator; an outlet for withdrawing said solution from said separator and a plurality of adjustable abutment means mounted in said limiting baffle means for selectively varying the rise of the respective throttling means.

3,880,703

TREATMENT OF PHOSPHATE SLIMES

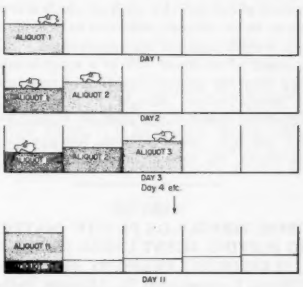
Gilbert J. Hardman, 4490 Marine Dr., West Vancouver, British Columbia, Canada

Filed Mar. 4, 1974, Ser. No. 448,106

Claims priority, application Canada, Sept. 4, 1973, 180278

Int. Cl. B01b; B01d *1/14;* **B03b; B01d** *1/00*

U.S. Cl. 159—47 **7 Claims**



1. A process of dewatering phosphate slimes comprising providing as a phosphate slime a mixture of hydrophilic clay, phosphate salt and at least about 95 percent water, said dewatering including run-off of some water; feeding a first time unit's production of such slime on a given unit area to a depth of about 12 to 24 inches; exposing such slime in such area to air at a relative humidity of less than 100 percent and a temperature of at least about 50°F; kneading such mixture during said air exposure for a time sufficient to reduce the proportion of water in said slime by at least about 10 percent by weight based on the total weight of said first time unit's initial feed; similarly feeding and treating another equal time unit's production of said slime in a sequentially disposed unit area immediately upon completing said first time unit's feeding step; continuing feeding and treatment of successive equal timed unit's slime production as aforesaid in substantially equal time and place sequential series of such areas, the number of which corresponds to the number of time units necessary to reduce the water content of said first time unit's production of slime said 10 percent minimum; and thereafter repeating said feeding, exposing and kneading for each said area in the named time and place sequence as many times as

necessary to produce the desired amount of harvest from each said area, the initial 10 percent reduction of water in the first time unit's production resulting within the time span of the completed first sequence.

3,880,704

METHODS AND COMPOSITIONS TO ENHANCE TALL OIL SOAP SEPARATION FROM WASTE PULPING LIQUOR

Robert J. Ziegler, Churchville, and Hillel Lieberman, Warminster, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed July 16, 1973, Ser. No. 379,285
Int. Cl. D21c *11/04*
U.S. Cl. 162—16 **14 Claims**

7. A method for enhancing the separation of tall oil soap from black liquors derived from alkaline pulping operations which comprises adding thereto an amount effective for the purpose of a composition comprising:

i. from about 0.1% to about 15% of a product derived by the esterification of an ethoxylated sugar alcohol having a mole ratio of 5 to 40 moles of ethylene oxide per mole of sugar by an unsaturated $C_{14} - C_{20}$ fatty acid or mixture thereof

ii. from about 0.5% to about 30% of at least one tallow fatty acid, or tallow fatty alcohol, having from about 12 to 20 carbon atoms

iii. a material in the weight ratio specified selected from the group consisting of:

a. from about 0.1% to about 15% of a fatty acid mono or diester of a polyethylene glycol, said fatty acid having from about 14 to 18 carbon atoms,

b. from about 0.3% to about 20% of a petroleum sulfonic acid, or water soluble salt thereof, having a molecular weight of from about 400 to 900, and

c. mixtures of (a) and (b), each of which is present in the mixture in an amount sufficient to provide the appropriate weight ratio for the composition

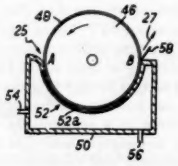
iv. from about 65 to about 98% of a water-insoluble liquid selected from the group consisting of vegetable oils, aliphatic hydrocarbons, alicyclic hydrocarbons, aromatic hydrocarbons, halogenated aliphatic hydrocarbons, halogenated alicyclic hydrocarbons, halogenated aromatic hydrocarbons, and long chain amines.

3,880,705

EXPANDING FIBROUS OR PLASTIC MATERIAL BY ADDING PUFFING AGENT UNDER PRESSURE AND SUBSEQUENT PRESSURE RELEASE

Jan Van Tilburg, Lyceumstraat 74, Alkmaar, Netherlands

Filed July 19, 1972, Ser. No. 273,227
Claims priority, application Netherlands, July 20, 1971, 7134025
Int. Cl. D06m *1/24;* **A23l** *1/18;* **A24b** *3/18*
U.S. Cl. 162—101 **22 Claims**



1. A process for expanding a fibrous or filamentary material comprising the steps of continuously feeding said material between a first surface and a second surface disposed in opposed co-operating relationship with said first surface and defining therewith a pressure zone, continuously advancing at least one of said surfaces whereby said material is continuously advanced through said pressure zone, heating said advancing material in said pressure zone while maintaining said advancing material under the pressure of a pressurized gaseous or vaporous puffing agent continuously introduced into said pressure zone separately from said material, and continuously separating said surfaces whereby said pressure is reduced and said puffing agent expands from said fibrous or filamentary material to expand said material.

3,880,706

SECURITY PAPER CONTAINING FUSED THERMOPLASTIC MATERIAL DISTRIBUTED IN A REGULAR PATTERN

Harold Malcolm Gordon Williams, Field Cottage, Cottage Lane, Sedlescombe, near Battle, Sussex, England

Continuation of Ser. No. 199,130, Nov. 16, 1971, abandoned. This application Aug. 29, 1973, Ser. No. 392,519
Claims priority, application United Kingdom, Nov. 16, 1970, 54495/70
Int. Cl. D21h *5/10*
U.S. Cl. 162—103 **16 Claims**

1. A method of making security paper comprising incorporating in the body of the paper a thermoplastic identification material in continuous form, said material comprising regions of enlarged cross-section connected by filaments of lesser cross-section, and raising the temperature of said thermoplastic material to a temperature at which said material fuses and said filaments part and draw back towards said regions of enlarged cross-section and the material is bonded to the fibres of the paper, whereby islands of thermoplastic material bonded to and within the paper are positioned in the paper in locations determined by the locations of the enlarged regions in the original thermoplastic material in continuous form.

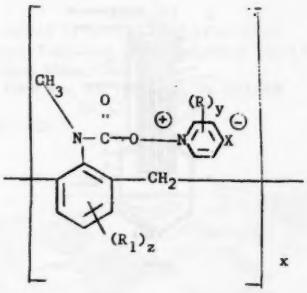
3,880,707

PROCESS FOR FIBER TREATMENT

Victor A. Pattison, Tonawanda, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed Jan. 12, 1973, Ser. No. 323,192
Int. Cl. D21h *3/12*
U.S. Cl. 162—167 **7 Claims**

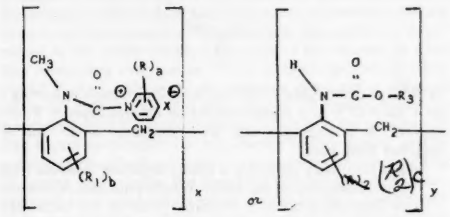
1. A process for rendering fibrous materials wet-strengthened which comprises treating said fibrous material with a wet-strengthening amount of an aqueous solution containing 0.1 to 10 percent of a treating material of the formula



wherein R and R_1 are alkyl or aryl organic radicals, having from 1 to 12 carbon atoms; x is a number having a value of from 1 to 10; y is a number having a value of from zero to 3; z is a number having a value of from zero to 3; and X is halogen.

3,880,708
PROCESS FOR FIBER TREATMENT
Victor A. Pattison, Tonawanda, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.
Filed Jan. 12, 1973, Ser. No. 323,020
Int. Cl. D21h 3/12
U.S. Cl. 162—167 8 Claims

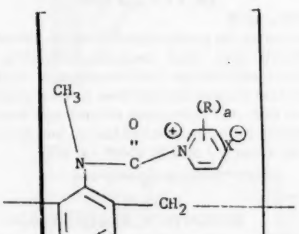
1. A process for rendering fibrous materials wet-strengthened and water repellent which comprises treating said fibrous material with a wet-strengthening and water-repelling amount of an aqueous dispersion comprising water and 0.1 to 10 percent of an a resinous material of the formula



wherein R, R_1 and R_2 are alkyl or aryl organic radicals, having from 1 to 12 carbon atoms; R_3 is an alkyl radical having from 5 to 24 carbon atoms; X is halogen; *a*, *b* and *c* are numbers having a value of from zero to 3; *x* is a number having a value of from 1 to 10 and *y* is a number from 0.8 to 4.

3,880,709
PROCESS FOR FIBER TREATMENT
Victor A. Pattison, Tonawanda, N.Y., assignor to Hooker chemicals & Plastics Corp., Niagara Falls, N.Y.
Filed Jan. 12, 1973, Ser. No. 323,179
Int. Cl. D21h 3/12
U.S. Cl. 162—167 7 Claims

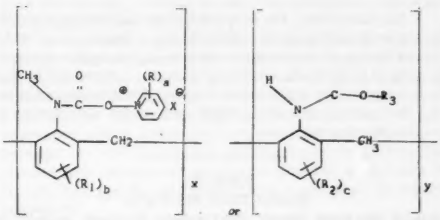
1. A process for rendering fibrous materials wet-strengthened which comprises treating saiad fibrous material with a wet-strengthening amount of a 0.1 to 10 percent of aqueous solution comprising water and a treating material of the formula



wherein R and R_1 are alkyl or aryl organic radicals having from 1 to 12 carbon atoms; *a* and *b* are numbers having a value of from zero to 3; X is halogen; and *x* is a number having a value of from 1 to about 10.

3,880,710
PROCESS FOR FIBER TREATMENT
Victor A. Pattison, Tonawanda, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.
Filed Jan. 12, 1973, Ser. No. 323,177
Int. Cl. D21h 3/12
U.S. Cl. 162—167 8 Claims

1. A process for rendering fibrous materials wet-strengthened and water repellent which comprises treating said fibrous material with a wet-strengthening and 0.1 to 10 percent of water repelling amount of an aqueous comprising water and a resinous composition of the formula



wherein R, R_1 and R_2 are alkyl or aryl organic radicals having from 1 to 12 carbon atoms; R_3 is an alkyl radical having from 5 to 24 carbon atoms; X is halogen; *a*, *b* and *c* are numbers having a value of from zero to 3; *x* is a number having a value of from 1 to 10 and *y* is a number having a value of from 0.8 to 4.

3,880,711
VACUUM CYLINDER ASSEMBLY HAVING ANGLED, TEAR-SHAPED, SIEVE SUPPORTING FOILS
Millard F. Hayes, Jr., P.O. Box 294, Warrensburg, N.Y. 12885
Filed Sept. 12, 1973, Ser. No. 396,868
Int. Cl. D21f 1/60, 3/10
U.S. Cl. 162—357 3 Claims

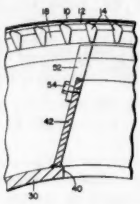
1. In a vacuum cylinder assembly, the combination of: a continuous outer subassembly including a circular sieve supported on a plurality of spaced circumferentially-arranged ring-mounted supporting foils,

a stationary inner subassembly concentrically sleeved within the outer subassembly and including a hollow cylinder having an arcuate through slot extending transversely through substantially the entire width of the outer subassembly and peripherally through a substantially 90° angle,

an outwardly projecting walled passageway fixed to the cylinder circumadjacent the slot and extending as a mouth from the cylinder periphery to adjacent the foils of

the outer subassembly, the outer subassembly being rotatable relative to the inner subassembly for the confrontation of an ever-changing portion of the peripheral area of the sieve with the mouth of the passageway, and

the subassemblies being cooperantly disposed to draw effluent through the sieve into the hollow of the cylinder via



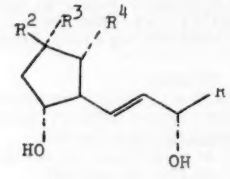
the passageway, the supporting foils each being generally tear shaped in cross section having a leading side, in the direction of roll rotation which is angled slightly inwardly so as to generate an inward pumping action, and having a top trailing angle with a downwardly sloping configuration serving to cause a slight vacuum for contributing to higher drainage.

3,880,712
REDUCTION PROCESS

Ronald Haywood Moore, MacClesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Dec. 26, 1973, Ser. No. 428,313
Claims priority, application United Kingdom, Jan. 15, 1973, 2031/73
Int. Cl. C12d *13/00*
U.S. Cl. 195—51 R **9 Claims**

1. A reduction process for the manufacture of an optically active prostaglandin intermediate of the formula and absolute sterochemistry:



I

wherein R^1 is:

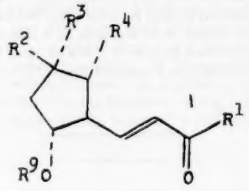
branched or unbranched alkyl or alkenyl of 4 to 10 carbon atoms; a group of the formula $—A^1.OR^5$, wherein A^1 is alkylene of 1 to 9 carbon atoms and R^5 is alkyl of 1 to 9 carbon atoms or cycloalkyl of 5 to 7 carbon atoms, provided that A^1 and R^5 together contain not more than 10 carbon atoms;

a group of the formula $-A^2R^6$, wherein A^2 is a direct bond or alkylene of 1 to 3 carbon atoms, and R^6 is aryl which is unsubstituted or which is substituted by halogen, nitro, alkyl, halogenoalkyl, or alkoxy each of 1 to 3 carbon atoms or dialkylamino wherein each alkyl is of 1 to 3 carbon atoms;

a group of the formula $A^3.A^4.R^7$, wherein A^3 is alkylene of 1 to 3 carbon atoms bearing as substituents 0, 1 or 2 alkyls each of 1 to 3 carbon atoms, A^4 is oxygen, sulphur, sulphinyl or alkylamino of up to 4 carbon atoms, and R^7 is aryl, benzyl or furfuryl optionally substituted by hydroxy, nitro, phenyl, halogen, alkyl, alkenyl, halogenoalkyl, alkoxy, alkenyloxy, or acylamino of 1 to 4 carbon atoms or dialkylamino wherein each alkyl is of 1 to 3 carbon atoms; or a group of the formula $—A^3.A^5.R^8$, wherein A^3 has the meaning stated above, A^5 is oxygen, sulphur, sulphinyl, sulphonyl, imino or alkylimino of up to 4 carbon atoms or a direct bond, A^3 and A^5 are each a direct bond, and R^8 is an aroatic heterocyclyl of one or two 5- or 6-membered rings, containing in one ring only, 1 or 2 non adjacent nitrogen hetero atoms, and optionally bearing 1 to 3 alkyls or halogens as substituents; and either R^2 is hydrogen and R^3 and R^4 together with the two adjacent ring carbon atoms form a lactone ring of the formula:

or R^4 is 6-carboxyhexyl or 6-carboxy-2-cis-hexenyl bearing 0 or 1 alkyl of 1 to 4 carbon atoms on carbon atom 4, 5 or 6 thereof, R is hydrogen and R^3 is hydroxy, or R^2 and R^3 together form oxo;

which comprises culturing a micro-organism selected from a basidiomycete of the order Aphyllophorales, Agaricales or Dacrymycetales, a deuteromycete of the order Hyphommycetales and a b[illegible]stomycete of the order Gryptococcales in the presence of a hydroxy-enone of the formula:



II

wherein R^1, R^2, R^3 and R^4 have the meanings stated above, and R^9 is a hydrogen atom or alkanoyl of up to 10 carbon atoms.

3,880,713
CEPHALOSPORIN COMPOUNDS

Ian Dunlop Fleming, Saint Peter; Michael Keith Turner, Wembley, and Eunice Jean Napier, Mattingley, all of England, assignors to Glaxo Laboratories Limited, Greenford, Middlesex, England

Filed May 7, 1974, Ser. No. 467,733
Claims priority, application United Kingdom, May 10, 1973, 22380/73
Int. Cl. C12d *9/00*
U.S. Cl. 195—80 R **6 Claims**

1. A process for the production of 7-amino-3-methylceph-3-em-4-carboxylic acid which comprises contacting 3-methyl-7β-phenoxyacetamidoceph-3-em-4-carboxylic acid with an amidohydrolase enzyme derived from *Erwinia aroideae* which is free from cells and deleterious enzyme and which is stabilised in solution by the presence of ferrous ions in a concentration of from about 0.2 mM to about 1.0 mM.

3,880,714
DIAGNOSTIC REAGENT

Arthur L. Babson, Chester, N.J., assignor to Warner-Lambert Company, Morris Plaines, N.J.

Filed July 18, 1973, Ser. No. 380,307
Int. Cl. G01n *33/00*
U.S. Cl. 195—99 **5 Claims**

1. A lyophilized composition of matter suitable for reconstitution by addition of water comprising a blood platelet substitute comprising cephalin having platelet factor-like activity in combination with about 0.05 to about 1.0 per cent by weight

of a non-porous fumed particulate silica having a particle size of about 20 to about 60 millimicrons and a surface area of about 50 square meters per gram.

3,880,715

IMMUNOASSAY FOR HAPTENS

Richard S. Schneider, Sunnyvale, Calif., assignor to Syva Company, Palo Alto, Calif.

Filed June 13, 1973, Ser. No. 369,696

Int. Cl. C07g *7/02*; **C12k** *1/00*

U.S. Cl. 195—103.5 R **2 Claims**

1. In a method for carrying out an immunoassay, wherein a hapten is covalently bound to lysozyme and the activity of the lysozyme is substantially reduced when the lysozyme to which the hapten is covalently bound is bound to an antibody for said hapten, and the content of the hapten in the solution is determined in the immunoassay as a result of free hapten in solution competing with hapten bound to lysozyme, which when bound to an antibody in the solution produces a different lysozyme activity, so that the amount of hapten bound to lysozyme which is bound to antibody is less in the presence of free hapten as compared to the absence of free hapten, and by employing standardized solutions containing known amounts of hapten and relating the lysozyme activity against *M. lysodeikticus* over a specified period of time to the concentration of hapten present in the standard solution, the improvement which comprises employing *M. lysodeikticus* in said immunoassay, as a substrate for said lysozyme, which has been heated in a lyophilized dry state at a temperature in the range of about 30°–100°C for a time in the range of about 1 hour to 86 hours, the time and temperature varying inversely.

3,880,716

PROCESS FOR MAKING OPTIMUM CHEMICAL CONVERSIONS AND BIOLOGICAL FERMENTATIONS

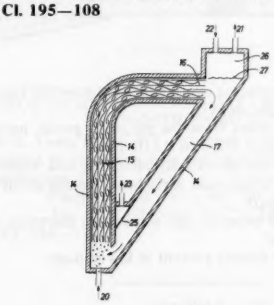
Wilke Engelbart, Wardenburgstr. 40, Oldenburg, and Fritz Engelbart, Hannoversche Str. 62, Anderten ub. Hannover, both of Germany

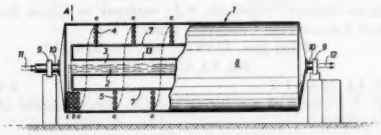
Filed Apr. 7, 1972, Ser. No. 242,045

Claims priority, application Germany, Apr. 8, 1971, 2118197

Int. Cl. C12b *1/14*; **C12k** *9/00*

U.S. Cl. 195—108 **9 Claims**





1. A method of adhesive culture fermenting a working liquid and producing microorganisms which comprises producing a relative flow between said liquid surrounding microorganisms adhering to the surfaces of a large number of solid bodies which are freely movable within said liquid, said bodies each having a volume of about 1 to 1,000 mm^3 and having a specific gravity different from that of said liquid, and continuously moving the liquid and the freely movable bodies in a circulating flow passing in a spiral path through a plurality of elongated tubes of small cross sectional area disposed in side-by-side relationship, said tubes having a helical core and forming a circuit for said circulating flow.

5. In the method of carrying out biochemical reactions between microorganisms and a nutrient liquid in the presence of a gas the improvement comprising adding to the liquid a large number of solid bodies which are freely movable within the liquid and which provide a large surface area for the adherence of microorganisms, said bodies each having a volume of about 1 to 1,000 mm^3 and having a specific gravity different from that of the nutrient liquid, introducing bubbles of the gas into the nutrient liquid moving the liquid and the bodies in a circulating flow passing in a spiral path through a plurality of elongated tubes of small cross sectional area disposed in side-by-side relationship, said tubes having a helical core and forming a circuit for said circulating flow, and separating the gas from the liquid.

7. In the method of carrying out biochemical reactions between microorganisms adhered to solid surfaces and a nutrient liquid in the presence of gas bubbles by passing streams of nutrient liquid through a plurality of elongated tubes of small cross section disposed in side-by-side relationship, the improvement which comprises increasing the area of contact between the microorganisms and the liquid by guiding the streams into contact with spiral cores disposed in the tubes to thereby increase the solid surface area available to the microorganisms.

3,880,717

METHOD OF CULTIVATING MICROORGANISMS

Leonid Borisovich Rubin, Leninsky prospekt, 6I/I, kv. 21, Moscow; Olga Vladimirovna Eremeeva, 3 pochtovoe Otdelenie, 15, kv. 28, Ljubertsy, Moskovskoi oblasti; Andrei Borisovich Rubin, Moscow; Natalya Mikhailovna Gorjukhova, ultisa Chkalova, 14/16, kv. 36, Moscow; Andrei Valentinovich Ivanov, Mikrorian "V", 28, kv. 31, Puschino Moskovskoi oblasti; Grigory Yakovlevich Fraikin, Leninsky prospekt, 81, kv. 146, Moscow, U.S.S.R., and Nina Borisovna Gradova, ulitsa Planernaya, 16, korpus 1, kv. 20, Moscow, all of U.S.S.R.

Continuation of Ser. No. 239,805, March 30, 1972, abandoned. This application Oct. 9, 1973, Ser. No. 404,735

Claims priority, application U.S.S.R., Mar. 30, 1971, 1634070; Nov. 1, 1971, 1708930

Int. Cl. C12b *1/00*, *1/20*

U.S. Cl. 195—112 **5 Claims**

1. A method for cultivating microorganisms comprising exposing a seeding culture of a microorganism to light illumination only within a spectral range of 300–750 nm in the presence of a vital sensitizing pigment capable of absorbing light within said spectral range, and then growing the seeded culture in a culture medium.

3,880,718

METHOD FOR LIMITING DAMAGE DUE TO BACTERIOPHAGES IN FERMENTATION MEDIA

Shigeru Yamanaka, Yokohama; Nobukazu Kashima, Kawasaki, and Koji Mitsugi, Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Sept. 3, 1974, Ser. No. 503,047

Claims priority, application Japan, Sept. 4, 1973, 48-99635

Int. Cl. C12b *1/24*; **C12d** *13/06*

U.S. Cl. 195—122 **8 Claims**

1. A method for limiting damage resulting from the presence of a bacteriophage in a fermentation medium, which comprises effecting the fermentation in a medium containing an amount of at least one N-acylamino derivative of glutamic

acid, glutamine, homocysteic acid, metallic salts thereof or mixtures thereof which is effective to inhibit the production of bacteriophage in the fermentation medium, said acyl radical of said N-acylamino group being characterized by containing an alkyl or alkenyl moiety having from about 16 to 18 carbon atoms.

3,880,719

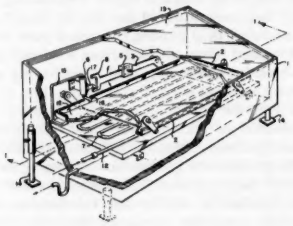
SOLAR STILL WITH REPLACEABLE SOLAR ABSORBING LINER AND WEIGHT CONTROLLED FEED INLET

Lewis Evans Massie, Box 79, Solana Beach, Calif. 92075

Filed Jan. 16, 1973, Ser. No. 324,070

Int. Cl. B01d *3/00*

U.S. Cl. 202—234 **3 Claims**



1. A dimensionally rigid solar distillation apparatus including a frame comprising a generally flat base and a plurality of generally upright wall members extending upwardly and completely around said base and sloping from its highest to its lowest opposite wall, a cover transparent to solar heat radiation with a wetable lower surface, said apparatus having walls and base insulated against thermal transfer and the entire enclosure being water tight, said enclosure having an exit orifice for condensate accumulating in the bottom of the enclosure, within said enclosure a dimensionally rigid evaporator tray constructed of high thermal conductive material and having a replacable water tight liner of a black, solar absorbing material said tray level in the horizontal plane of the enclosure base supported on each side by two or more hinge arms rotating around their support pins at a fixed radius, said tray capable of moving vertically on the radial path described by the rotating hinge arms, said tray having a projecting overflow tube at one end and slightly below the vertical rim of the tray, said tube displacing a flapper valve in the end wall of the enclosure when the tray is at its lowest vertical position, said overflow tube allowing excess fluid in the tray to exit the enclosure, beneath said tray and in the same plane of the tray, a heat exchanger of coiled tubing, said heat exchanger absorbing heat radiated from the evaporating tray and the ambient heat of the enclosure to heat incoming fluid to the evaporating tray, a pivoted lever to couple the vertical movement of the evaporating tray to a fluid inlet valve, said lever having an adjustable counterweight, adjustment of the counterweight controlling the level of the fluid in the tray by modulating the action of the inlet valve, said counter weight and valve action also adjustable to suit the density of the incoming fluid, an inlet into the enclosure feeding the incoming fluid into the heat exchanger, from the heat exchanger into the fluid control valve.

3,880,720

APPARATUS FOR CHARGING COKE-OVEN CHAMBERS

Dietrich Wagener; Friedrich Isermann, both of Essen, and Ernst Rietschle, Essen-Stadtwald, all of Germany, assignors to Didier-Kellogg, Essen, Germany

Filed Aug. 9, 1973, Ser. No. 387,198

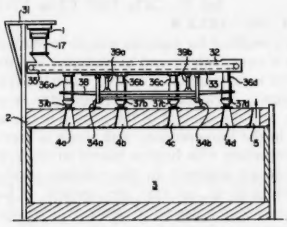
Claims priority, application Germany, Aug. 11, 1972, 2239557

Int. Cl. C10b *35/00, 31/04*

U.S. Cl. 202—262 **9 Claims**

1. An apparatus for charging coal into the chambers of coke ovens arranged longitudinally in a battery, said apparatus comprising:

a main longitudinal conveyor fixedly positioned to extend longitudinally above said battery, said longitudinal conveyor being connectable to a coal supply and including: a conveying surface having therein a discharge opening, said conveying surface being movably mounted within said longitudinal conveyor for selective movement longitudinally thereof; and



scraper means for moving coal received from said coal supply longitudinally along said conveying surface within said longitudinal conveyor; and

a charging means for selectively discharging coal through said discharge opening into charging openings of selected of said chambers.

3,880,721

METHOD FOR REDUCING (PSEUDO-) OHMIC OVERPOTENTIAL AT GAS-EVOLVING ELECTRODES

Ernest L. Littauer, Hollywood, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Mar. 2, 1972, Ser. No. 231,240

Int. Cl. B01k *3/00*

U.S. Cl. 204—1 R **6 Claims**

1. A method of reducing overpotential at gas-evolving electrodes comprising the steps of:

a. selecting fine wires from the platinum group, having a diameter of about 0.002 to 0.010 inch,

b. mechanically and electrically attaching said wires to a conductive substrate, said wires being spaced about 0.18 to 0.30 inch apart,

c. connecting the substrate and wires as an electrode in an electrolyte, and

d. passing a high density current at low voltage.

3,880,722

POTENTIOMETRIC CO DETECTOR

Morton Beltzer, Westfield, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Jan. 2, 1973, Ser. No. 320,317

Int. Cl. G01n *27/46*

U.S. Cl. 204—1 T **6 Claims**

1. A method of measuring the CO concentration of a gas comprising:

a. admitting gas which may contain CO to a first aqueous solution containing hydrogen chloride and at least a single oxidizing agent selected from the group consisting of ferrous and ferric ions, quinones, and cupric ions and a palladium chloride catalyst in amounts sufficient for producing a voltage which increases linearly with time when CO reacts with said solution,

b. measuring the voltage difference at a time, t, following reaction of CO with said solution between said first solution and a second aqueous solution comprising the same oxidizing agent as said first solution and not in contact with said CO-containing gas whereupon the measured voltage difference, ΔE, is linearly dependent upon the concentration of CO in said gas and the time exposure of said gas to said first solution in accordance with the following equation:

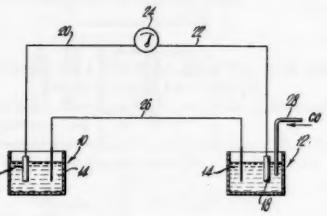
$$\Delta E = K [Pco] t$$

Where: $K = a^2/b\, k_2$, and

Wherein:

$[Pco]$ = the partial pressure of CO in said gas,

t = the time elapsed from zero reference at which the voltage measurement is made,



$a = [Fe^{+3}]$ = the concentration of ferric ions in said first solution,

$b = [Fe^{+2}]$ = the concentration of ferrous ions in said first solution, and

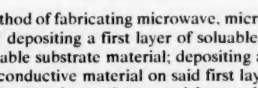
$k_2 = k_1[Pd^{+2}]$ = the rate constant dependent on flow rate of said gas times the concentration of palladium ions in said first solution;

c. comparing said voltage difference of (b) with a reference correlation between known CO content of a gas and the voltage generated, thereby obtaining the CO concentration of said gas.

3,880,723
METHOD OF MAKING SUBSTRATES FOR MICROWAVE MICROSTRIP CIRCUITS

Clyde H. Lane, Rome, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 28, 1973, Ser. No. 392,378
Int. Cl. C23b *5/48, 7/02;* **C23f** *17/00*
U.S. Cl. 204—12 **3 Claims**



1. In a method of fabricating microwave, microstrip circuits, the steps of: depositing a first layer of soluable material on a smooth soluable substrate material; depositing a second layer of soluable conductive material on said first layer; applying a patterned photo resist to the second layer; electroplating a conductive material through said resist; removing the resist; arc-plasma spraying the resulting circuit and exposed second layer with a dielectric material and removing the original substrate and first and second layers.

3,880,724
COPPER (II) COMPLEXES AND PHOTOGRAPHIC ELEMENTS CONTAINING SAME

Henry J. Gysling, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 26, 1973, Ser. No. 409,828
Int. Cl. G03c *5/04, 5/24, 1/00*
U.S. Cl. 204—15 **30 Claims**

1. A photographic composition comprising a polymeric binder and a copper (II) complex having the formula:

$$[CuL_n](BAr_4)_2$$

wherein L is a ligand selected from the group consisting of monodentate or polydentate neutral Lewis bases containing nitrogen or oxygen donor atoms, Ar is aryl containing from six to 12 carbon atoms, and n is an integer of 2 or 4.

15. In a process of developing an image in a light-sensitive element comprising a support and an actinic radiation-sensitive copper material by contacting the copper material with a chemical developer or physical developer, the improvement comprising employing as said actinic radiation-sensitive copper (II) complex represented by the formula:

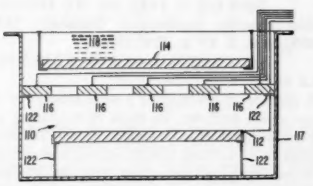
$$[CuL_n](BAr_4)_2$$

wherein L is a ligand selected from the group consisting of monodentate or polydentate neutral Lewis bases containing nitrogen or oxygen donor atoms, Ar is aryl containing from six to 12 carbon atoms, and n is an integer of 2 or 4.

3,880,725
PREDETERMINED THICKNESS PROFILES THROUGH ELECTROPLATING

John A. Van Raalte, Princeton, and Victor Christiano, Hamilton Sq., both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 10, 1974, Ser. No. 459,590
Int. Cl. C23b *5/48, 5/68*
U.S. Cl. 204—15 **4 Claims**



1. An electroplating apparatus for obtaining a metal film having a predetermined thickness profile on a surface of an article comprising:

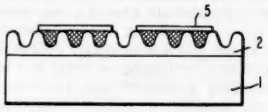
a body of plating material, said body spaced from said surface of said article with the surface areas of said article to be most heavily plated in active relation with said body, a plurality of modifying electrodes, each one of said electrodes spaced from said surface of said article with the surface areas of said article to be least heavily plated in active relation with at least one of said electrodes, and means for providing differences in electrical potential between said article, said body of plating material and said modifying electrodes wherein at least some of said modifying electrodes can be provided with electrical potentials which are different from each other.

3,880,726

METHOD OF MAKING LITHOGRAPHIC AND OFFSET PRINTING PLATES

Hirokazu Sakaki, Odawara, Japan, assignor to Fuji Photo Film Co., Ltd., Nakanuma. Minami Ashigara-shi, Kanagawa, Japan

Division of Ser. No. 274,383, July 24, 1972, Pat. No. 3,841,218. This application Mar. 21, 1973, Ser. No. 344,023
Claims priority, application Japan, July 23, 1971, 46-55015
Int. Cl. B41c *3/08*; B41n *1/04*
U.S. Cl. 204—17 1 Claim



1. A process for preparing a lithographic and offset printing plate comprising imagewise exposing to light a light sensitive elemement comprising an aluminum support having thereon an anodic oxidation film and a silver halide contained in the openings of or on said film, developing said silver halide to form metallic silver particles in the image areas exposed to light, converting said metallic silver particles in said image areas to an electrically conductive silver image, and selectively electroplating said electrically conductive silver image with copper, said silver halide having been formed by first treating said anodic oxidation film on said aluminum support with an aqueous solution of a silver salt containing a diffusion-controlling dilute solution of a hydrocolloid and then treating with an aqueous solution of an alkali metal halide.

3,880,727

METHOD OF PRETREATING BANDS AND SHEETS OF STEEL FOR ONE-LAYER ENAMELING, AND ELECTROLYTIC BATH FOR USE IN CONNECTION THEREWITH

Klaus Jurging, Remscheid, and Hans Zwach, Wuppertal, both of Germany, assignors to Hoeschst Aktiengesellschaft, Dortmund, Germany

Filed Oct. 4, 1972, Ser. No. 295,010
Claims priority, application Germany, Oct. 6, 1971, 2149808; Sept. 2, 1972, 2243339
Int. Cl. C23b *5/48*, *5/08*; C23d *5/00*
U.S. Cl. 204—34 5 Claims

1. A method of pretreating a steel article for an enameling process, which includes the steps of preparing an electrolyte bath containing at least one element selected from the group consisting of nickel and cobalt, adding non-substituted nitrate ions from inorganic substance to said electrolyte in the amount of 0.5 to 110 gr./liter of the electrolyte fluid, and depositing upon the steel article a layer containing at least one of said elements from the electrolyte bath upon the article to be pretreated at a bath temperature of from room temperature to boiling temperature at a current density of from 5 to 50 A/dm² for a period of from 5 to 60 seconds.

3,880,728

MANUFACTURE OF LEAD DIOXIDE/TITANIUM COMPOSITE ELECTRODES

Wolfgang Habermann, Mainz; Heinz Nohe, Meckenheim, and Peter Jaeger, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Sept. 3, 1974, Ser. No. 502,666
Int. Cl. B01k *3/06*; C23f *17/00*
U.S. Cl. 204—38 A 8 Claims

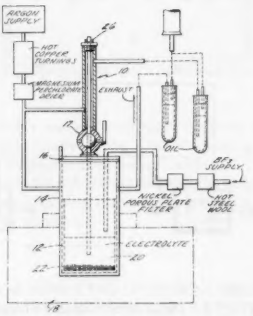
1. A process for the manufacture of a lead dioxide/titanium composite electrode by anodic deposition of lead dioxide on a titanium surface, wherein an intermediate layer of a carbide or boride of an element of sub-group 4 or 5 and/or a silicide of an element of sub-group 4, 5 or 6 of the periodic table of the elements and/or silicon carbide, is applied to the titanium surface before depositing the lead dioxide.

3,880,729

PROCESS FOR ELECTRODEPOSITING TITANIUM DIBORIDE FROM FUSED SALTS

Jordan D. Kellner, West Suffield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Oct. 18, 1973, Ser. No. 407,697
Int. Cl. C23b *11/00*
U.S. Cl. 204—39 12 Claims



1. A process for producing substantially pure coherent titanium diboride on a cathode by electrodeposition comprising: providing a fused salt bath consisting essentially of at least one alkali metal fluoride selected from the group consisting of the fluorides of lithium, sodium, potassium, rubidium and cesium;

heating said bath to a temperature of about 1,000° to 1,400°F in a noncontaminating atmosphere;

establishing in the bath a fluoborate ion concentration of approximately 1–20 percent, by weight, and a titanium ion concentration of approximately 0.5–4 percent, by weight; and

establishing a current density at the cathode of approximately 9–500 ma/cm², said current density being approximately 9–35 ma/cm² at a temperature of 1000°–1,100°F, 25–100 ma/cm² at a temperature of 1,100°–1,250°F and 40–500 ma/cm² at a temperature of 1,250°–1,400°F.

3,880,730

ELECTRO-GALVANIC GOLD PLATING PROCESS

Ralph R. Wright, Oak Ridge; Calvin C. Wright, Lenoir City, and George S. Petit, Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Mar. 21, 1974, Ser. No. 453,480
Int. Cl. C23b *5/28*
U.S. Cl. 204—46 G 3 Claims

1. A method for depositing metallic articles with gold which comprises immersing said article in a plating bath maintained at a temperature in the range 90°–100°C and at a pH in the range 4.5–6.5, said bath consisting essentially of 0.5 to 10 grams/liter lithium or potassium aurocyanide and 15–150 grams/liter ammonium chloride, while said article is in electrical contact with a dissimilar metal which renders the article cathodic in said bath.

3,880,731

METHOD FOR PREPARING ALIPHATIC HYDROXY ACIDS

Marina Savvatievna Rusakova, ulitsa Furmanova, 1, kv. 35; Valeria Alexandrovna Podgornova, ulitsa Titova, 16, kv. 9; Vitaly Nikolaevich Kreitsberg, prospekt Lenina, 53, kv. 42; Boris Fedorovich Ustavschikov, ulitsa Tolbukhina, 40, kv. 44; Mark Iosifovich Farberov, prospekt Oktyabrya 39, kv. 7, all of Yoroslavl; Yakov Iosifovich Turyan, ulitsa Sverdlova, 44, kv. 97, Krasnodar, and Evgeny Pavlovich Shvyrkov, ulitsa Chkalova, 49, kv. 68, Yaroslavl, all of U.S.S.R.

Filed May 29, 1973, Ser. No. 364,402

Int. Cl. C07b *29/06;* **C07c** *29/00, 59/04*

U.S. Cl. 204—74 **5 Claims**

1. A process for preparing aliphatic α-hydroxy acids comprising electrolyzing aliphatic α-nitrato carboxylic acids in aqueous solution in the cathode compartment of an electrolytic cell having anode and cathode compartments separated by a diaphragm at a cathode potential of −0.6 to −1.0 volts relative to the saturated calomel electrode.

3,880,732

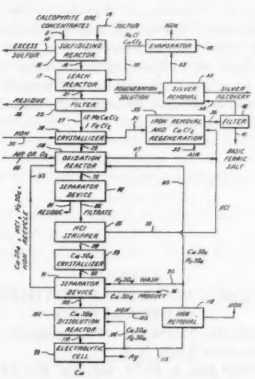
HYDROMETALLURGICAL PROCESS FOR THE PRODUCTION OF COPPER

John B. Sardisco, Shreveport, La., assignor to Pennzoil Company, Houston, Tex.

Continuation-in-part of Ser. No. 289,980, Sept. 18, 1972, Pat. No. 3,817,743. This application May 23, 1974, Ser. No. 472,736

Int. Cl. C22d *1/16;* **C22b** *15/00*

U.S. Cl. 204—107 **20 Claims**



1. In a process for the production of metallic copper from copper iron sulfide ore concentrates containing chalcopyrite in which the ore concentrates are first reacted with sulfur vapor to form a sulfur-treated concentrate containing a member from the class consisting of x-bornite, idaite and mixtures thereof, the improved hydrometallurgical process comprising:

a. Leaching said sulfur treated concentrate with cupric chloride to achieve substantial solubilization of the copper content of the ore concentrate, thereby forming a leached solution containing cuprous chloride;

b. Crystallizing cuprous chloride from said leach solution and separating the cuprous chloride crystals therefrom;

c. Reacting said cuprous chloride crystals with sulfuric acid and oxygen to produce copper sulfate crystals;

d. Separating said crystals from the copper sulfate liquor;

e. Dissolving the separated copper sulfate crystals in a sulfuric acid media; and

f. Electrolyzing the resulting copper sulfate solution to produce metallic copper at the cathode.

3,880,733

PRECONDITIONING OF ANODES FOR THE ELECTROWINNING OF COPPER FROM ELECTROLYTES HAVING A HIGH FREE ACID CONTENT

Geoffrey Eggett, Stockton-on-Tees, and Wayne Robert Hopkins, Ingleby Greenhow, both of England, assignors to Davy Powergas Limited, London, England

Filed Nov. 20, 1973, Ser. No. 417,483

Claims priority, application United Kingdom, May 7, 1973, 21649/73

Int. Cl. C22d *1/16;* **B01k** *3/06;* **C22b** *3/00*

U.S. Cl. 204—108 **11 Claims**

1. A process for the electrowinning of copper in which the copper-containing electrolyte includes 50 grams per liter or more of free sulphuric acid, and in which a lead or lead alloy anode is employed wherein said anode has been conditioned by electrolysis as the anode in a fluoride ion-containing, sulfuric acid electrolyte which is substantially free from copper to provide a stable, insoluble surface coating on said anode.

3,880,734

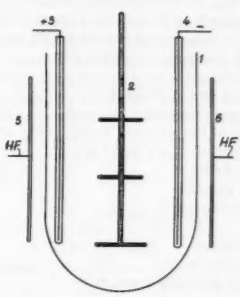
PROCESS FOR THE SEPARATION OF ERGOTAMINE

Jean Bach, Waldstrasse 19, D-8032 Grafelfing, Germany

Filed Mar. 20, 1974, Ser. No. 453,152

Int. Cl. B01k *1/00*

U.S. Cl. 204—155 **14 Claims**



1. A process for the separation of ergotamine, in which a liquid containing a mixture of ergot-alkaloids is treated with a static or low-frequency electric and/or magnetic field and simultaneously with a high-frequency electromagnetic field; the thereby formed ergotaminine is separated as a poorly soluble precipitate, and is re-converted into an ergotamine by a known process.

3,880,735

PREPARATION OF THIOL ADDUCTS OF S-PROPENYL DIHYDRO-CARBYL DITHIOPHOSPHATES

Alexis A. Oswald, Mountainside, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 763,997, Aug. 1, 1968, Pat. No. 3,681,219, which is a division of Ser. No. 518,028, Jan. 3, 1966, abandoned. This application June 7, 1972, Ser. No. 260,678

Int. Cl. C07f *9/16;* **A01n** *9/36*

U.S. Cl. 204—158 R **7 Claims**

1. A process for the selective preparation of S-2-hydrocarbylmercaptopropyl dialkyl dithiophosphates which comprises reacting an S-propenyl dialkyl dithiophosphate, said dithiophosphate having two C_1–C_{30} alkyl substituents, and a hydrocarbyl thiol represented by the formula

$R_4 - SH$

wherein R_4 is selected from the group consisting of methanethiol, ethanethiol, and propanethiol, i-propanethiol, n-butanethiol, benzenethiol, α-naphthalenethiol, α-toluenethiol, 4 -chlorobenzenethiol, 4-nitrobenzenethiol, 3-chloro-p-toluenethiol, 2,4-dichlorobenzenethiol and 4-methylmercaptobenzenethiol, at a temperature of between about −80°C and about 100°C in the presence of a free radical initiator, the mole ratio of hydrocarbyl thiol to S-propenyl dialkyl dithiophosphate being between about 1:1 and 10:1, said S-2-hydrocarbylmercaptopropyl dithiophosphate adduct product being formed substantially free from its adduct isomer.

3,880,736

RADIATION GRAFT POLYMERIZATION OF VINYL PYRIDINE MONOMERS IN AN AMINO CONTAINING SOLVENT SYSTEM

John Lyndon Garnett, 29 Arabella St., Longueville, New South Wales, and Ewan Cameron Martin, 13 Raymond St., Oatley, New South Wales, both of Australia

Continuation-in-part of Ser. No. 237,549, March 23, 1972, abandoned. This application Oct. 23, 1973, Ser. No. 408,412

Int. Cl. B01j *1/10, 1/12*

U.S. Cl. 204—159.12 **3 Claims**

1. A process for the graft polymerisation of a vinyl pyridine monomer selected from the group consisting of 2-vinyl pyridine, 2-methyl-5-vinyl pyridine, 4-vinyl pyridine and mixtures thereof onto a backbone polymer selected from the group consisting of cellulose, polyethylene, polypropylene and polyvinyl chloride, and the monomer being such that the vinyl group and any substitutes are connected to a carbon atom in the pyridine ring, the reaction being initiated by a dose of from 0.1 to 10 megarads of an ionising radiation and being carried out in a solvent comprising at least 5% by weight of a solvent selected from the group consisting of

2 - amino ethanol
N - Methyl-2-amino ethanol
and 3 - amino propanol

the remainder of the solvents, if any, being selected from the group consisting of

A C_2 to C_9 Ketone
A C_1 to C_5 alcohol
dimethyl sulphoxide
dioxane,
methyl cellosolve
ethyl cellosolve water
and miscible mixtures thereof

3,880,737

COMBINATION ELECTRODE

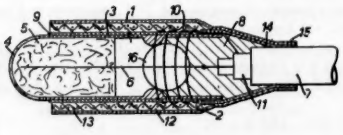
Alfred Edwin Brunt, Fife, Scotland, assignor to Beckman-Riic Limited, Glenrothes, Fife, Scotland

Filed June 25, 1973, Ser. No. 373,192

Claims priority, application United Kingdom, June 29, 1972, 30511/72

Int. Cl. G01n *27/36, 27/30*

U.S. Cl. 204—195 G **2 Claims**



1. A combination electrode comprising a glass sensing electrode and a reference electrode, said reference electrode comprising:

a layer of a crystalline salt bridge material encircling the body of the sensing electrode;
a layer of an absorbent for a salt bridge solution lying within the crystalline layer and extending to one end of the crystalline layer;
a reference conductor extending into the salt bridge material and making electrical contact with the salt bridge solution in the absorbent layer; and
a sleeve to retain the crystalline layer in position, said sleeve being open at the said one end of the crystalline layer to provide direct communiction between the absorbent layer and the exterior of the electrode and being closed at the opposite end of said crystalline layer.

3,880,738

PROCESS FOR PRODUCING HIGH-MOLECULAR NUCLEIC ACIDS BY FERMENTATION

Takeo Suzuki; Fusao Tomita, and Seiga Ito, all of Machida, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Continuation of Ser. No. 80,239, Oct. 12, 1970, abandoned. This application June 4, 1973, Ser. No. 367,036

Int. Cl. C12d *13/06*

U.S. Cl. 195—28 N **9 Claims**

1. A process for producing a high-molecular nucleic acid selected from the group consisting of deoxyribonucleic acid and ribonucleic acid by fermentation, which consists essentially of culturing aerobically a microorganism capable of accumulating said nucleic acid directly in a fermented liquor and belonging to *Arthrobacter*, *Brevibacterium*, *Corynebacterium*, *Pseudomonas*, *Aspergillus* and Candida in a medium containing at least one member of the class consisting of hydrocarbons and carbohydrates as the main carbon source and nitrogen source, accumulating said nucleic acid directly in the fermented liquor and isolating the accumulated nucleic acid from the fermented liquor.

3,880,739

ENZYME CATALYZED OXIDATIONS OF HYDROCARBONS

Richard I. Leavitt, Morrisville, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 4, 1973, Ser. No. 320,417

Int. Cl. C12b *1/00*

U.S. Cl. 195—28 R **14 Claims**

1. In the oxygen oxidation of a hydrophobic reactant comprising at least one paraffin, or partially oxygenated derivative thereof, by contacting oxygen, said hydrophobic reactant and an aqueous system containing at least one enzyme capable of catalyzing this oxidation under reaction conditions sufficient to support said oxidation; the improvement which comprises providing as a reaction mass said hydrophobic reactant in a continuous hydrophobic phase and said enzyme in a discontinuous aqueous phase enveloped by said continuous hydrophobic phase; providing a hydrophobic phase permeable-aqueous enzyme solution impermeable semi-permeable membrane; contacting said reaction mass with said semi-permeable membrane under such temperature and pressure conditions as to pass said hydrophobic phase containing said higher oxygenated derivative product therethrough; and recovering said higher oxygenated derivative from said passed hydrophobic phase.

3,880,740
CULTIVATION OF EPSILON-CAPROLACTAM-UTILIZING MICROORGANISM

Akio Mimura, Miyazaki; Shiro Hayakawa, Tokyo, and Takashi Iguchi, Miyazaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 31, 1973, Ser. No. 393,340
Claims priority, application Japan, Sept. 1, 1972, 47-87121
Int. Cl. C12b 1/00
U.S. Cl. 195—29 6 Claims

1. A process for the removal of ϵ-caprolactam from waste liquor containing it at a concentration of from 0.1 percent to 4 percent by weight which comprises aerobically culturing *Pseudomonas lactamolyticus* NRRL B-5749 in said waste liquor.

3,880,741
METHOD OF PRODUCING L-SERINE

Katsusuke Kageyama, Yokohama; Isamu Maeyashiki; Koji Kubota, both of Kawasaki; Shinpachi Konishi, Chigasaki, and Shinji Okumura, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Nov. 19, 1973, Ser. No. 417,208
Claims priority, application Japan, Nov. 24, 1972, 47-117836
Int. Cl. C12d 13/06
U.S. Cl. 195—29 5 Claims

1. A method of producing L-serine which comprises:
a. holding cells of an artificially induced mutant of *Corynebacterium glycinophilum* in contact with an aqueous solution of glycine and a carbon source under aerobic conditions until L-serine accumulates in said solution,
1. said mutant requiring, for the growth thereof, at least one nutrient of the group consisting of leucine, isoleucine, methionine, tryptophan, serine, and glycine,
2. the pH value of said solution being between 5 and 9, and
3. the concentration of said glycine in said solution being between 0.5 and 5 g/dl; and
b. recovering the accumulated L-serine from said aqueous solution.

3,880,742
β-1,4-/β1,3 GLUCANASE

Arthur Edwin James; Godfrey Fare, both of Ulverston; Brian Frederick Sagar, Cheadle; Fred Lucas, Manchester, and Mitchell Ian DeGray, Oakley, all of England, assignors to Glaxo Laboratories Limited, Middlesex, England

Filed Feb. 20, 1973, Ser. No. 333,527
Claims priority, application United Kingdom, Feb. 22, 1972, 8215/72
Int. Cl. C12d 13/10
U.S. Cl. 195—31 R 13 Claims

10. A β-1,4/β-1,3 glucanase-containing enzyme composition derived from an organism of species *Penicillium emersonii*, said enzyme composition being characterised by retention of at least 75 percent of said β-glucanase activity on heating in aqueous solution at pH 6.0 at 95°C for 10 minutes.

3,880,743
PROCESS FOR PREPARING ORGANOMETALLIC COMPOUNDS

John L. Lang, P.O. Box 1242, Midland, Mich. 48640

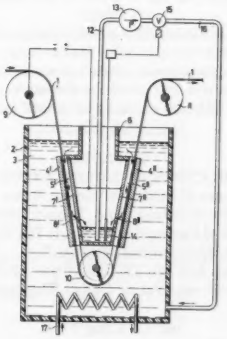
Continuation of Ser. No. 711,514, March 8, 1968, abandoned, which is a continuation of Ser. No. 595,372, Nov. 18, 1966, abandoned, which is a division of Ser. No. 134,256, Aug. 28, 1961, Pat. No. 3,299,026. This application May 21, 1973, Ser. No. 362,313
Int. Cl. C07b 29/06; C07f 15/00, 9/00
U.S. Cl. 204—165 10 Claims

1. A process foor producing an organometallic compound by reaction of atoms of an element selected from the group consisting of lithium, rubidium, potassium, barium, strontium, calcium, sodium, magnesium, zinc, manganese, beryllium, mercury, aluminum, tin, cadmium, titanium, gallium, arsenic, bismuth, chromium, cobalt, vandium, nickel, iron, lead, antimony, silicon, and phosphorus with at least one reagent selected from the group consisting of sterically unhindered and polarizably inclined organic halides and compounds containing available and active multiple bonded carbon bonds, which comprises disposing an electrically conductive body containing said element in a form selected from the group consisting of elemental metal, a solid mixture, an amalgam, an intermetallic compound, fused mixtures, and carbides thereof, within a non-interfering fluid dispersing phase, arcing said electrically conductive body by passing a quantity of electricity therethrough within said non-interfering dispersing phase, the magnitude of the electrical energy being sufficient to progressively disintegrate said body into finely divided form, and reacting said finely divided element with said reagent.

3,880,744
APPARATUS FOR THE ELECTROCHEMICAL TREATMENT OF METAL STRIP

Walter Idstein, Oestrich, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed July 11, 1973, Ser. No. 378,051
Claims priority, application Germany, July 13, 1972, 2234365
Int. Cl. C23b 5/68
U.S. Cl. 204—206 3 Claims



1. An apparatus for the electrochemical treatment of metal strip which comprises an electrolyte bath means having two compartments, one compartment being the main compartment and the other being a common compartment, and provided with two electrodes, a guide roller for guiding the strip through the electrolyte bath means, two duct means arranged in a V-form above the guide roller, one upstream and one downstream of the guide roller in the path of travel of the strip, through which duct means, in operation, the strip travels past the electrodes in a straight line toward said guide roller and in a straight line from said guide roller, means connecting

the lower ends of the two duct means to the common compartment separate from the main compartment of the electrolyte bath to which the upper ends of the duct means are connected, and means for maintaining a liquid level in the common compartment lower than that in the main compartment.

3,880,745

HELICALLY FLUTED DEEP HOLE CATHODE AND METHOD OF MAKING SAME

Richard H. Shaw, Hampden, Mass., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 28, 1974, Ser. No. 455,839

Int. Cl. B01k *1/00*; **B23p** *1/12*

U.S. Cl. 204—290 R **4 Claims**

1. A helically fluted cathode for drilling deep holes of small diameter in workpieces using the electrochemical drilling method comprising:

A. an electrically conductive cathode tube through which electrolyte may flow to the workpiece,

B. a dielectric coating enveloping the exterior of the cathode tube,

C. a selectively shaped cathode tip at one end of the cathode tube,

D. helical flutes on the exterior of the cathode tube comprising:

1. at least one threadlike member helically wound around the cathode tube to form helical flutes thereon, and

2. a coating of electrical insulation covering the cathode tube exterior and threadlike member to form helical flutes of selected diameter about the cathode tube axis.

3,880,746

PRODUCTION OF LUBRICATING OILS

Robert Neil Bennett, Englefield Green; Brian James Oswald, Cove near Farnborough, and Terence Norman Thurlow, New Haw, all of England, assignors to The British Petroleum Company Limited, London, England

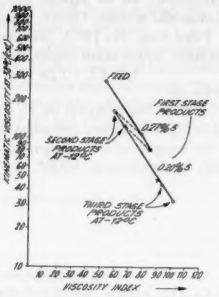
Filed Jan. 30, 1974, Ser. No. 437,974

Claims priority, application United Kingdom, Feb. 8, 1973, 6214/73

Int. Cl. C10g *37/02*

U.S. Cl. 208—59 **8 Claims**

1. A wholly catalytic process for the production of lubricating oils from a petroleum feedstock boiling above 350°C without the use of solvents for aromatic and wax removal comprising the steps of passing the oil over a catalyst comprising one or more hydrogenating components selected from Groups VIa and VIII of the Periodic Table on a refractory oxide support together with hydrogen at a temperature of from 343° to 454°C and a pressure of 70 to 210 bars gauge, then over a catalyst comprising one or more hydrogenating components selected from Groups VIa and VIII of the Periodic Table incorporated with a crystalline mordenite of reduced alkali metal content together with hydrogen at a temperature of from 250° to 500°C and a pressure of from 7 to 210 bars gauge, and then over a catalyst comprising one or more hydrogenating components selected from Groups VI*a* and VIII of the Periodic Table on a refractory oxide support



containing 1 to 10 percent wt of halogen together with hydrogen at a temperature of from 200° to 450°C and a pressure of from 30 to 210 bars gauge and recovering a product of decreased pour point and increased viscosity index as compared with the feedstock.

3,880,747

CATALYTIC HYDROFINISHING OF LUBE OIL PRODUCT OF SOLVENT EXTRACTION OF PETROLEUM DISTILLATE

Ivor W. Mills, Hacks Point, Md.; Merritt C. Kirk, Jr., McKinney, Tex., and Albert T. Olenzak, Media, Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Division of Ser. No. 70,590, Sept. 8, 1970, Pat. No. 3,732,154, Continuation-in-part of Ser. No. 812,516, Feb. 19, 1969, Pat. No. 3,619,414, Continuation-in-part of Ser. No. 636,493, May 5, 1967, Pat. No. 3,681,279, Continuation-in-part of Ser. No. 622,398, March 13, 1967, Pat. No. 3,462,358, Continuation-n-part of Ser. No. 730,999, May 22, 1968, Pat. No. 3,839,188, Continuation-in-part of Ser. No. 652,026, July 10, 1967, Pat. No. 3,502,561. This application May 4, 1973, Ser. No. 357,288

Int. Cl. C10g *23/02*, *31/14*

U.S. Cl. 208—87 **12 Claims**

1. Hydro-aromatization process for producing improved lubricating oil stocks comprising (a) extracting a lube oil distillate stock with an aromatic selective solvent to obtain a less aromatic raffinate product and a more aromatic extract product, and (b) contacting said raffinate, with hydrogen in the presence of a catalyst consisting essentially of an oxide or sulfide of nickel and molybdenum, said contacting being carried out at a temperature of about 725°–765°F, an LHSV of 0.1-1.0, and a hydrogen pressure of about 500–3,000 p.s.i.g., the combination of conditions being selected so as to effect appreciable hydrogen consumption, but no substantial cracking, such that the product of said contacting has a greater weight percent monocyclic and total aromatics than said product of said extraction.

3,880,748

PLATINUM-INDIUM-MOLYBDENUM REFORMING CATALYSTS

Willard H. Sawyer, Baton Rouge, La., assignor to Exxon Research and Engineering Company, Linden, N.J.

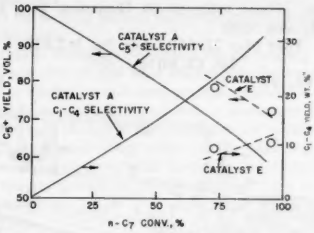
Division of Ser. No. 215,170, Jan. 3, 1972, Pat. No. 3,833,516. This application Dec. 13, 1973, Ser. No. 424,300

Int. Cl. C10g *35/08*

U.S. Cl. 208—136 **5 Claims**

1. A process for improving the octane quality of naphthas, particularly paraffinic naphthas, by contacting said naphtha at reforming conditions with a catalyst composite consisting

essentially of a porous inorganic oxide support, platinum in concentration ranging from about 0.05 to about 2 percent, molybdenum as molybdic oxide in concentation ranging from



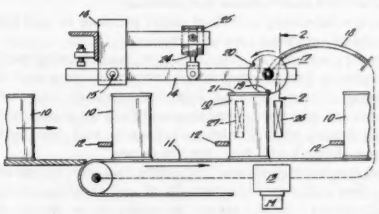
about 0.01 to about 2 percent, and indium in concentration ranging from about 0.05 to about 2 percent, based on the total weight of the catalyst.

3,880,749

APPARATUS FOR DETERMINING VACUUM IN CLOSED CANS

Joseph D. Ramsay, Woodbury, N.J., assignor to Campbell Soup Company, Camden, N.J.

Filed June 10, 1974, Ser. No. 477,673
Int. Cl. B07c *3/10*
U.S. Cl. 209—80 **21 Claims**



1. Apparatus for determining vacuum in a closed container such as a can having a can end with a central circular area normally lying in a flat plane and which is concave inwardly in a sealed can containing vacuum and convex outwardly in a sealed can having an internal pressure greater than atmospheric pressure; means to sense the degree of curvature and direction of curvature of the central circular area of the can end and produce an electric signal which is a function of the degree and direction of the curvature of the central portion of the can end, and means to compare said electric signal with a standard to determine if a predetermined vacuum is in said can.

3,880,750

SEALING SURFACE GAUGE

Richard L. Butler, and John W. Juvinall, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

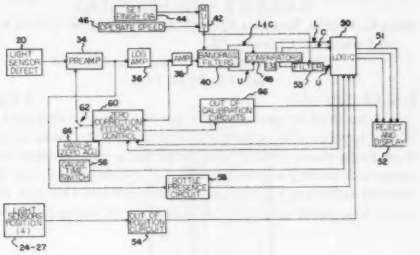
Filed June 6, 1974, Ser. No. 476,872
Int. Cl. B07c *5/342*
U.S. Cl. 209—111.7 **34 Claims**

20. In an apparatus for the inspection of glass containers, said glass containers having a finish portion with an annular rim defining an opening into the container, wherein glass containers are delivered one at a time to an inspection machine and wherein said glass containers are indexed through said inspection machine past a plurality of inspection stations at which inspection stations said glass containers are briefly halted and rotated about their vertical axis, an improved inpsection station for said apparatus which comprises, in combination:

a light sosurce positioned above said rim to illuminate a portion of said rim;

a main light responsive means, positioned above said rim to receive light reflected from said rim, for generating a first electrical signal, having a substantially constant level, when said rim is without defects, and for generating a second electrical signal, above or below the level of said first electrical signal, in response to a defect in said rim;

electronic circuit means, connected to said main light responsive means, for electronically removing said first electrical signal and for electronically frequency filtering



said second electrical signal to produce two filter signal components having different frequency characteristics;

comparator means, connected to said electronic circuit means, for generating a defect signal if one of said filtered signal components exceeds either a pre-selected level greater than said first electrical signal level or a first pre-selected level less than said first electrical signal level and for generating a defect signal if the other one of said filtered signal components exceeds a second pre-selected level less than said first electrical signal level; and

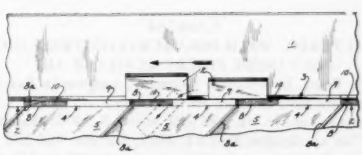
logic means, connected to said comparator means, for generating a defective bottle output signal in response to any defect signal from said comparator means.

3,880,751

CONVEYORS WITH LATERAL DISCHARGE APPARATUS

Gary J. Wirth, Milwaukee, Wis., assignor to Speaker Motion Systems, Inc., Milwaukee, Wis.

Filed Dec. 27, 1973, Ser. No. 428,922
Int. Cl. B07c *7/00*
U.S. Cl. 209—125 **18 Claims**



1. In a conveying apparatus for moving a plurality of individual load units in physically longitudinally spaced relationship in a longitudinal path and selectively laterally moving of said units along a lateral path at preselected discharge stations, the combination comprising, discharge gate means extending longitudinally of the moving load units in said lateral path of load units with a leading portion and a trailing portion and defining a stop wall in said lateral path, means for lowering of said gate means downwardly with respect to said load units and defining a gate opening with a leading portion and a trailing portion and permitting lateral discharge along said lateral path, and partial closure means for partially clos-

ing of the trailing portion of the gate opening defined by a lowered gate means, said partial closure means including an inclined wall surface located within said discharge opening, said wall surface extending longitudinally upwardly within the opening and thereby directing a load unit upwardly within the opening as the load unit moves through the corresponding portion of the discharge opening.

3,880,752

METHOD OF TREATING WATER CONTAINED IN GASOLINE STORAGE TANKS

John G. Premo, Western Springs, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Mar. 20, 1974, Ser. No. 452,854
Int. Cl. B01d *17/00*
U.S. Cl. 210—54 **5 Claims**

1. A method for preventing water contained in storage tanks of the type used by gasoline filling stations to store gasoline from being pumped from said tanks along with gasoline which comprises adding to said water a water-soluble polymer in an amount sufficient to substantially increase the viscosity of the water to a point whereby it is incapable of being pumped.

3,880,753

FLOCCULATION OF SUSPENDED SOLIDS IN AQUEOUS MEDIUM BY ACTION OF CYCLO-1,1-DIALLYLGRIANIDINE POLYMER

Hans Peter Panzer, Stamford, Conn., and Louis Vincent McAdams, East Greenwich, R.I., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 107,456, Jan. 18, 1971, Pat. No. 3,790,537. This application Oct. 1, 1973, Ser. No. 402,436
Int. Cl. B01d *21/01*
U.S. Cl. 210—54 **6 Claims**

1. A process for the flocculation of suspended solids in aqueous medium, which comprises distributing through said medium an effective amount therefor of a water-soluble cationic polymer consisting essentially of cyclo-1,1-diallylguanidine linkages substantially formed by free radical homopolymerization of 1,1-diallylguanidine.

3,880,754

FILTERING WITH POLYACRYLONITRILE OR POLYAMIDE FIBERS AS FILTER AID

Hans R. Brost, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 232,949, March 8, 1972, abandoned. This application Apr. 12, 1974, Ser. No. 460,358
Claims priority, application Germany, Mar. 12, 1971, 2111855
Int. Cl. B01d *39/04*
U.S. Cl. 210—75 **2 Claims**

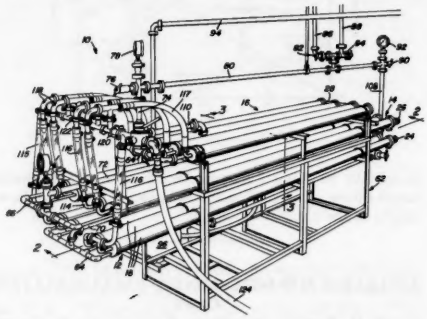
1. In the process of desalting or decoloring an aqueous solution with a filter aid by forming a suspension of the filtering medium, including a filtering aid, homogenizing said suspension, applying the solids content of the suspension as a homogeneous layer and passing the aqueous solution to be filtered therethrough, the improvement which comprises employing as said homogeneous layer a mixture of a cation and an anion exchange resin together with a filter aid comprising ground fibers of polyacrylonitrile, a polyamide or a mixture thereof.

3,880,755

METHOD AND APPARATUS FOR SEPARATING CHEESE WHEY PROTEIN

Frank A. Thomas, Greenwood, Wis., and Donald D. Spatz, Excelsior, Minn., assignors to Osmonics, Inc., Hopkins, Minn., by said Spatz

Filed May 22, 1973, Ser. No. 362,828
Int. Cl. B01d *31/00*
U.S. Cl. 210—91 **9 Claims**



1. Apparatus for concentrating whey fluids comprising:
filter cartridge means containing at least one spiral wound ultrafiltration membrane module, said cartridge means including inlet means, first outlet means for concentrate and second outlet means for permeate,
means for delivering said fluid under pressure to said inlet means of said filter cartridge means,
means for cleaning said filter cartridge, said cleaning means comprising first conduit means interconnecting said delivering means and said first outlet means and valve means for selectively directing said fluid from said delivering means to said inlet means or to said first outlet means through said first conduit means,
second conduit means interconnecting said inlet means and said first outlet means externally of said cartridge means, said second conduit means including valve means for selectively permitting concentrate to flow from said first outlet means toward said inlet means through said second conduit means when said fluid is being delivered to said inlet means or to flow from said inlet means toward said first outlet means through said second conduit means when said fluid is being delivered to said first outlet means,
third conduit means interconnecting said second conduit means and said delivering means for permitting recycling concentrate through said filter cartridge means, and
discharge conduit means coupled with said second conduit means, said discharge conduit means including valve means for selectively adjusting the rate of flow of concentrate from said apparatus.

3,880,756

METHOD AND APPARATUS FOR CONCENTRATING SLUDGE

Carlo J. Raineri, Canastota; Zoltan P. Mandy, Camillus; Michael Lesczynski, Chittenango; James S. Styron, North Syracuse, and George Akerhielm, Manlius, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed May 1, 1973, Ser. No. 356,276
Int. Cl. B01d *43/00*
U.S. Cl. 210—97 **9 Claims**

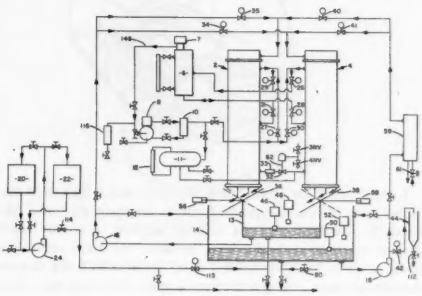
1. Apparatus for increasing the concentration of raw sludge, said apparatus comprising:
first and second heat exchangers for holding refrigerant and sludge in heat exchange relationship to freeze and subsequently thaw sludge fed to the heat exchangers, each heat

exchanger having means for receiving and discharging sludge and refrigerant;

means for holding raw sludge discharged from said heat exchangers;

means for holding melted sludge discharged from said heat exchangers;

a reversible refrigeration system for circulating refrigerant through one of said heat exchangers for evaporation to freeze sludge in said heat exchanger and for circulating refrigerant through the other heat exchanger for condensation to melt sludge previously frozen in said other heat exchanger, said refrigeration system including refrigerant flow reversing means for reversing the direction of flow of the refrigerant to switch the functions of said heat exchangers;



means associated with each of said heat exchangers for directing sludge discharged from the evaporating heat exchanger to said raw sludge holding means, and for directing sludge discharged from the condensing heat exchanger to said melted sludge holding means;

raw sludge transferring means for selectively transferring raw sludge from said raw sludge holding means to the heat exchanger wherein refrigerant is evaporating to freeze the sludge in said evaporating heat exchanger; and means for transferring melted sludge from said melted sludge holding means to the heat exchanger wherein refrigerant is condensing to melt the sludge previously frozen therein when said condensing heat exchanger was operating as an evaporating heat exchanger.

3,880,757

FILTERING SYSTEM

Gary Thomason, 13530 S.W. Aragon St., Beaverton, Oreg. 97005

Continuation-in-part of Ser. No. 178,736, Sept. 8, 1971, Pat. No. 3,759,388. This application Apr. 16, 1973, Ser. No. 351,588

Int. Cl. B01d *27/08*

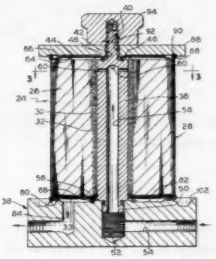
U.S. Cl. 210—167 **14 Claims**

1. In a filtering system for cooking oil, means for providing a disposable and replaceable filter unit readily engageable in sealing connection with said filtering system, said means comprising:

a manifold base adapted to receive said filtering unit in supporting relation and provided with separate connection means for supplying the entrance and exit of oil,

said filtering unit comprising a cylindrical can having filtering media therein for filtering said oil by passage of said oil therethrough, said cylindrical can having a top and bottom joined to the cylindrical wall of said can, said top and said bottom are provided with substantially aligned apertures, said filtering media having a hollow core therethrough in alignment with said apertures, said core being a tube extending from the bottom to the top of said can, said tube having a plurality of openings therein constructed and arranged at the end of said tube adjacent the top of said can, the top of said filtering media being spaced from the underside of the top of the can to thereby define a space therebetween,

an upstanding spindle joined to said manifold base and having a central passage communicating with one of said connection means in said manifold base, said spindle also having radial passage means communicating between said central passage and cooperating with said openings in said tube peripherally arranged around said spindle, said spindle being adapted to be received through said aligned apertures in said can, said radial passage means communicating radially outwardly through said openings in said tube into the said space defined by the underside of the top and the top of the filtering media,



said can having one or more openings in the bottom outside said first of said aligned apertures for communicating with the other of said connection means in said manifold base,

a substantially flat cover plate having an aperture therethrough, said spindle adapted and constructed to project upwardly through the aligned aperture in said top and through the aperture of said flat cover plate, knob means adapted and constructed to engage a portion of the spindle projecting through said flat cover plate, said knob means including means to draw said cover plate toward said spindle and said can whereby said cover plate forces downwardly said can to provide a sealing relation between the bottom of said can and the manifold base around said spindle and openings.

3,880,758

OIL COLLECTION DEVICE

Frank Galicia, 5043 Catherine St., Philadelphia, Pa. 19143

Filed Apr. 18, 1973, Ser. No. 352,210

Int. Cl. B01d *23/20*; **E02b** *15/04*

U.S. Cl. 210—187 **7 Claims**

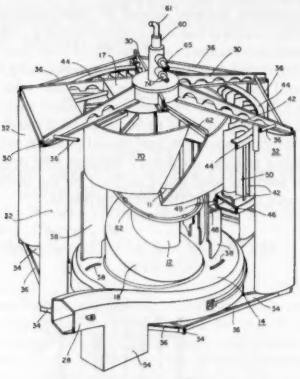
1. A liquid collection device comprising:

a rotatable cylindrical member disposed within said collection device,

an inverted trough supported by and disposed in a spiral fashion around the perimeter of said cylindrical member, liquid collection means rotatably connected to the upper portion of said cylindrical member to direct collected liquid to said inverted trough,

and a circular expulsion chamber located at the base of said collection device cooperatively associated with said in-

verted trough to receive the liquid flowing from said trough and to direct said liquid through a duct communi-



cating with said chamber to containment means located apart from said collection device.

3,880,759

BLOOD DIALYZER

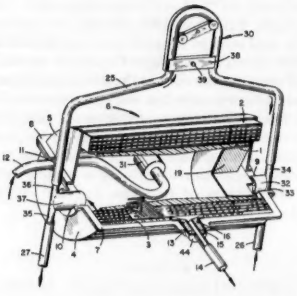
Leendert Van Assendelft, Arnhem, Netherlands, assignor to Organon Teknika B.V., Oss, Netherlands

Filed Mar. 26, 1973, Ser. No. 345,067

Claims priority, application Netherlands, Mar. 24, 1972, 7204023; Mar. 24, 1972, 7204024

Int. Cl. B01d *13/00*

U.S. Cl. 210—194 **3 Claims**



1. A disposable blood dialyzer and a disposable system for recirculating dialysis fluid through the dialyzer, said dialyzer and system being adapted to be packaged, said dialyzer comprising a hollow core member, a housing enclosing the core member with a space therebetween, a semi-permeable membrane disposed about the core member and dividing the said space into a blood compartment and a compartment for dialysis fluid, an inlet means and an outlet means for flow of fluid into and out of the compartment for dialysis fluid, a first continuous tube connecting the said inlet means with the said outlet means externally of the housing and adapted for cooperation with a tubing pump to recirculate dialysis fluid through the compartment for dialysis fluid, a second tube connected to the first tube at said inlet for introducing fresh dialysis fluid to the system, a third tube connected to the first tube at said outlet for removing dialysis fluid from the system, means for flow of blood into the blood compartment and means for flow of blood from the blood compartment.

3,880,760

CONNECTOR DEVICE FOR COIL-TYPE DIALYSER

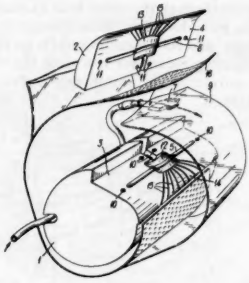
Romano Flandoli, Mirandola, Italy, assignor to Sandoz Ltd. (a/k/a Sandoz AG), Basel, Switzerland

Filed June 7, 1973, Ser. No. 367,969

Claims priority, application Italy, June 8, 1972, 25428/72

Int. Cl. B01d *31/00*

U.S. Cl. 210—321 **6 Claims**



1. Apparatus for connecting an open-ended flattened membrane tube of a coil-type dialyser to an open end of a blood conduit, which comprises a base section, a cover section shaped to mate with the base section, the base section and cover section together form a core about which the flattened membrane tube and membrane support material may be spirally wound, the base section and cover section together further defining a recess between them to receive the open end of the blood conduit, and a seal operable between the base section and cover section to seal the open end of the membrane tube with the open end of the blood conduit within the membrane tube.

3,880,761

RECTANGULAR SIEVING FRAME AND FILTER DRUM PROVIDED WITH A PLURALITY OF SUCH SIEVING FRAMES

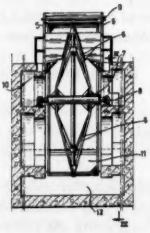
Anne Jellesma, Sneek, Netherlands, assignor to Machinefabriek W. Hubert & Co. B.V., Sneek, Netherlands

Filed Sept. 12, 1973, Ser. No. 396,508

Claims priority, application Netherlands, Sept. 18, 1972, 7212634

Int. Cl. B01d *33/06*

U.S. Cl. 210—404 **4 Claims**



1. A rotatable filter drum comprising a hub, annular supporting and sealing rims secured to said hub and rotatable around a horizontal center line, rectangular sieving frames for said filter drum, consisting of a mounting with sieving gauze, said mounting being constituted by a beam profile on two opposite sides and by some strips perpendicular to said profiles which by their ends are secured to the beam profiles, while the sieving gauze is provided with stretched but tension-

less warp threads each having their opposite ends connected to the two beam profiles and weft threads extending parallel to said profiles and free of said mounting, each beam profile of said sieving frames being elastically clamped in such a way along an imaginary generatrice of the cylindrical surface of the drum, that the strips are convexly outwards curved at a slight pre-tension to form arcs of smaller radius than said drum.

3,880,762

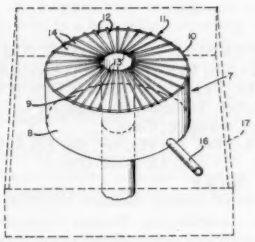
SEPARATOR FOR CUTTINGS

Roger Francis Wise, 76 Main St., Franklin, La. 70538

Filed Nov. 19, 1973, Ser. No. 417,047

Int. Cl. B01d *23/02*

U.S. Cl. 210—460 **11 Claims**



1. A separator for drill bit cuttings for attachment atop a well pipe including, a container a peripheral side wall, an enclosing bottom wall and a top opening, mounting means connecting said container to the top of the well pipe, said mounting means including a vertically disposed sleeve extending through said bottom wall and engaging said well pipe, the top of said sleeve disposed above the plane of the top of the side wall, an apertured slide bridging the top opening of said container, said slide including a plurality of spaced elongated elements inclined downwardly from the top of said sleeve to said side wall, each adjacent pair of said elements defining an elongated opening therebetween, and said slide being disposed in a plane no higher than the point from which drilling fluid containing cuttings issues from said well pipe sleeve, whereby, said drilling fluid passes between said elongated elements and is collected in said container while said cuttings of a dimension greater than the width of said openings pass over said elongated elements and fall beyond said container side wall.

3,880,763

ASYMMETRIC MEMBRANOUS ARTICLES AND METHODS FOR THEIR MANUFACTURE

Charles Brian Chapman, and Robert Anthony Haldon, both of Pontypool, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jan. 12, 1973, Ser. No. 322,942

Claims priority, application United Kingdom, Jan. 12, 1972, 1437/72

Int. Cl. B01d *31/00*

U.S. Cl. 210—490 **11 Claims**

1. A process for making an asymmetric membranous article having a laminar film structure which comprises:

a. forming a first film of a mixture of at least one organic monomer containing an ethylenically unsaturated group and at least one inert liquid;

b. cooling said first film to at least partially solidify said liquid prior to polymerization;

c. forming a second film of a second organic monomer containing an ethylenically unsaturated group, said second film being in a liquid state;

d. non-thermally polymerizing said first and second films in such a manner that during at least the non-thermal polymerization of said first or second film the films are in a laminar formation; and

e. subsequently removing said inert liquid to form a film structure in which one surface layer comprises a semipermeable membrane and the other adjacent surface layer comprises a porous structure.

3,880,764

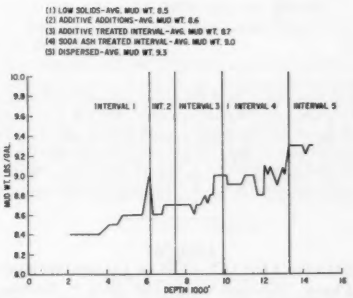
POLYMER NON-DISPERSED DRILLING FLUIDS

James E. Donham, Houston, Tex., assignor to Amoco Production Company, Tulsa, Okla.

Filed Nov. 6, 1972, Ser. No. 304,027

Int. Cl. C10m *3/40*

U.S. Cl. 252—8.5 A **10 Claims**


(1) LOW SOLIDS - AVG. MUD WT. 8.5
(2) ADDITIVE ADDITIONS - AVG. MUD WT. 8.6
(3) ADDITIVE TREATED INTERVAL - AVG. MUD WT. 8.7
(4) SODA ASH TREATED INTERVAL - AVG. MUD WT. 9.0
(5) DISPERSED - AVG. MUD WT. 9.3
INTERVAL 1
INT. 2
INTERVAL 3
INTERVAL 4
INTERVAL 5
MUD WT. LBS./GAL.
DEPTH 1000'

1. A conventional polymer non-dispersed low solids aqueous drilling fluid having incorporated therein an additive selected from the group consisting of triamino dihexylene pentakis methylene phosphonic acid and tetramino trihexylene hexakis methylene phosphonic acid, the alkali metal salts of said acids and mixtures thereof, said additive being present in an amount effective to render said fluid stable to contamination by soluble calcium and salts.

3,880,765

WATERFLOOD PROCESS USING ALKOXYLATED LOW MOLECULAR WEIGHT ACRYLIC ACID POLYMERS AS SCALE INHIBITORS

James D. Watson, Houston, Tex., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Nov. 12, 1973, Ser. No. 415,207

Int. Cl. C02b *5/06;* **E21b** *43/20*

U.S. Cl. 252—8.55 D **2 Claims**

1. In a waterflood system in which water is added to one or more injection wells in order to force oil from underground formations to one or more producing wells, the process which comprises introducing into at least one of said injection wells a water flooding composition containing a scale inhibiting amount of an alkoxylated water-soluble acrylic acid polymer having a molecular weight within the range of 3,000 to 20,000, said acrylic acid polymer being alkoxylated with from 2–60% by weight of ethylene oxide or propylene oxide.

3,880,766

NEW NON-IONIC SURFACE-ACTIVE AGENTS DERIVED FROM FATTY CHAIN DIOLS AND METHOD OF PREPARING SAME

Gregoire Kalopissis, Paris, and Guy Vanlerberghe, Mitry-Mory, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

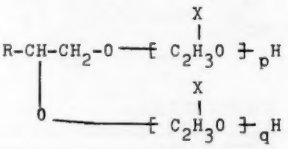
Continuation-in-part of Ser. No. 652,005, July 10, 1967, abandoned. This application Aug. 9, 1972, Ser. No. 279,050

Claims priority, application Luxembourg, July 12, 1966, 51542The portion of the term of this patent subsequent to Jan. 2, 1990, has been disclaimed.

Int. Cl. C11d *7/26, 7/06*

U.S. Cl. 252—173 **2 Claims**

1. A composition, consisting essentially of an aqueous solution containing surface active amounts of a non-ionic surface-active agent having the formula:



wherein R is selected from the group consisting of alkyl, alkenyl, alkoxyalkyl or alkylaryloxyalkyl, having 8 – 22 carbon atoms, X is $-CH_2OH$, p and q each independently represent a number between 0 and 10 inclusive, with the proviso that the sum of p and q is between 1 and 10 inclusive, and that q is other than zero when R has 8 – 12 carbon atoms and p is one.

3,880,767

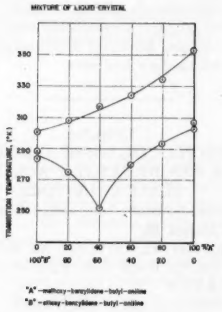
NEMATIC LIQUID-CRYSTAL COMPOSITIONS

Roger Chang, Thousand Oaks, and John P. Dobbins, San Marino, both of Calif., assignors to Rockwell International, El Segundo, Calif.

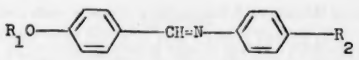
Continuation of Ser. No. 87,515, Nov. 6, 1970, abandoned. This application Oct. 12, 1972, Ser. No. 297,172

Int. Cl. G09f *1/28, 1/36;* **G03b** *1/24*

U.S. Cl. 252—299 **4 Claims**



1. A composition having a relatively wide nematic range suitable for use in a nematic liquid-crystal light valve comprising a eutectic mixture of two or more nematic substances each having the structure:



where $R_1 = C_nH_{2n+1}$; n is 1 or 2,

$R_2 = C_nH_{2n+1}$; n is from 2 to 12,

and $R_1 + R_2$ has a total of at least four carbon atoms;

said first nematic substance is p-ethoxy-benzylidene-p'n-butylaniline;

the concentration of said first nematic substance is about 35 to 45 weight percent of said composition; and

said second nematic substance is p-methoxy-benzylidene-p'-n-butylanilene;

the concentration of said second nematic substance is about 55 to 65 weight percent of said composition.

3,880,768

METHOD OF MAKING IMPROVED STRONTIUM MAGNESIUM PYROPHOSPHATE PHOSPHOR ACTIVATED BY DIVALENT EUROPIUM

Francis N. Shaffer, Towanda, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Feb. 5, 1973, Ser. No. 329,627

Int. Cl. C09k *1/36*

U.S. Cl. 252—301.4 P **2 Claims**

1. A method of making strontium magnesium pyrophosphate phosphor activated by divalent europium comprising the steps of: preparing a substantially homogeneous mixture of starting host materials consisting essentially of strontium diorthophosphate and magnesium ammonium phosphate and a starting activator material consisting essentially of europium phosphate as $EuPO_4 \times H_2O$ and heat treating said materials to form said phosphor, said heat treating comprising:

placing said homogeneous mixture in covered silica boats and first heat treating at a temperature between about 1,125°C to 1,150°C for about 2 hours in a first nitrogen-hydrogen atmosphere comprising about 5% hydrogen; cooling said mixture to about room temperature in said atmosphere; pulverizing the cake formed by said first heat treating in a porcelain mortar and sifting through a 200 mesh sieve; second heat treating said sieved mixture in covered silica boats at about 1,125°C to 1,150°C for about 6 hours in a nitrogen-hydrogen atmosphere comprising about 25% hydrogen; cooling said mixture to about room temperature in a nitrogen-hydrogen atmosphere comprising about 5% hydrogen; and pulverizing said cake in a porcelain mortar and sieving through a 200 mesh sieve.

3,880,769

METHOD OF MAKING MICROSPHEROIDAL NUCLEAR FUELS HAVING CLOSED POROSITY

John M. Googin, and Charles R. Schmitt, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Continuation of Ser. No. 48,579, May 25, 1970, abandoned. This application Dec. 19, 1972, Ser. No. 316,625

Int. Cl. C09k *3/00*

U.S. Cl. 252—301.1 R **9 Claims**

1. A process for forming a nuclear fuel which comprises contacting ion exchange resin beads with an aqueous solution of an inorganic salt of at least one actinide metal, separating the actinide-loaded resin beads from the solution, drying the separated beads, and then carbonizing the dried beads at a temperature in the range 1,400°–2,200°C. to form spheroidal particles with closed porosity containing the actinide metal as an oxide or carbide dispersed within a continuous carbon matrix.

3,880,770

METHOD OF MAKING IMPROVED MAGNESIUM ALUMINUM GALLATE PHOSPHORS

Charles F. Chenot, Towanda, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Continuation-in-part of Ser. No. 329,651, Feb. 5, 1973. This application Mar. 22, 1973, Ser. No. 343,827
Int. Cl. C09k 1/04, 1/68
U.S. Cl. 252—301.4 R 3 Claims

1. A method of manufacturing magnesium aluminum gallate luminescent material activated by manganese which comprises the steps of: forming a mixture of raw materials which will yield said luminescent material, said materials including a source of magnesium selected from the group consisting of MgO and $MgCO_3$, a source of gallium as β-Ga_2O_3 and a source of aluminum selected from the group consisting of, α-Al_2O_3 and $Al(OH)_3$; including in said raw materials a source of fluorine as MgF_2; thoroughly mixing said raw materials and said source of fluorine; heat treating said raw materials in alumina crucibles in a humidified, oxidizing atmosphere the water content of said atmosphere being sufficient to effect the hydrolysis of MgF_2 for about 2 hours at a temperature of about 1200°C – 1300°C; cooling and comminuting said material; reheating said material at least twice in silica crucibles in a reducing atmosphere for less than 40 minutes each time at a temperature of about 1200°C – 1300°C; and cooling, comminuting and sieving said material the second and subsequent reheating in said reducing atmosphere effecting an improvement in the luminescence effeciency of said material.

3,880,771

AQUEOUS SUSPENSION VEHICLE USEFUL IN SUSPENSION POLYMERIZATION SYSTEM FOR SPHERES

Max Klein, New Shrewsbury, N.J., assignor to Normac, Inc., Matawan, N.J.

Continuation-in-part of Ser. No. 700,704, Jan. 26, 1968, abandoned. This application Jan. 17, 1972, Ser. No. 218,596
Int. Cl. B01f 17/22, 17/48
U.S. Cl. 252—357 5 Claims

1. An aqueous suspension vehicle useful in suspension polymerization of a styrene-monomer in the presence of a styrene-monomer-polymerization effective amount of a styrene-monomer-polymerization free radical-providing catalyst, which suspension consists essentially of (a) water and dissolved therein (b) a water-soluble suspending agent inert to reaction with styrene, which is at least one of (i) a hydroxyethylcellulose having a viscosity within the range of one whose 2 percent by weight, on dry basis, aqueous solution at 20°C. has a Hoopler viscosity of from 6175 to 7600 centipoises, (ii) a hydroxyethylcellulose whose such 5 percent aqueous solution at 20°C. has a Hoopler viscosity of from 120 to 160 centipoises, (iii) carboxymethylcellulose, (iv) polyacrylic acid, (v) polymethacrylic acid, (vi) the sodium or ammonium salt of any of the carboxylic acid substances (iii), (iv), and (v), and (vii) polyvinyl alcohol; said suspending agent being present in a concentration above that which will allow the produced styrene-polymer to agglomerate under the polymerization conditions and below about 0.4 weight percent, and (c) from about 0.01 to about 0.5 percent of a water-soluble organic solvent for said suspending agent, which solvent is selected from the group consisting of formic acid, dimethylformamide, dimethyl-acetamide, tetrahydrofuran, ethylenediamine, diethylenetriamine, 2-bromopyridine, and 3-cyanopyridine.

3,880,772

COMPOSITION FOR RING PASSIVATION

Romualdes Vatslovovich Rekertas, ulitsa V. Putny, 9, kv. 80; Romas Romovich Sharmaitis, ulitsa Antakalne, 93, kv. 24, and Juozas Juozovich Matulis, ulitsa Maloneii II, kv. I, all of Vilnjus, U.S.S.R.

Filed Aug. 8, 1972, Ser. No. 278,867
Claims priority, application U.S.S.R., Oct. 5, 1972, 1702264
Int. Cl. C23f 11/18
U.S. Cl. 252—387 7 Claims

1. A composition for passivating zinc comprising a mixture of the following components, in parts by weight of from 5.0 to 20.0 of trivalent chromium compounds, as calculated for the chromium; from 0.1–2.0 hexavalent chromium, as calculated for the chromium; from 10.0 to 25.0 of inorganic salts of nitric acid, as calculated for the NO_3^- radical; and from 1.8 to 6.0 of boron-containing compounds, as calculated for the boron.

3,880,773

LEAD-SILICATE COMPOSITE STABILIZERS

Edward L. White, Freehold, and Bernard Engelbart, Trenton, both of N.J., assignors to N.L. Industries, Inc.

Filed May 14, 1973, Ser. No. 360,091
Int. Cl. B01j 1/16; C08f 45/58; C08g 51/58
U.S. Cl. 252—400 A 10 Claims

1. A composite of from 30 to 80 percent by weight of a basic lead compound and from 20 to 70 percent by weight of a hydrous magnesium silicate; said basic lead compound represented by the formula: n PbO .Pb A; wherein n is a number from 1 to 4 and A is an anion radical selected from the group consisting of phosphite, organic carboxylate, mixtures of phosphite and sulfate, mixtures of phosphite and organic carboxylate and mixtures of sulfate and organic carboxylate.

3,880,774

CYCLIZATION PROCESS

Thomas C. Snapp, Jr., Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 290,294, Sept. 19, 1972, Pat. No. 3,817,996. This application Feb. 20, 1974, Ser. No. 444,231
Int. Cl. B01j 11/22
U.S. Cl. 252—458 8 Claims

1. A catalyst which has the particular property of simultaneously dehydrating and dehydrogenating a glycol-type material to form an unsaturated cyclic compound which catalyst consists essentially of (1) a component selected from the group consisting of copper on a support and copper chromite, and (2) a component selected from the group consisting of tungstic acid and heteropolytungstic acids, wherein the ratio of the first component to the second component is from about 2.0:1.0 to about 35.0:1.0 by weight.

3,880,775

PROCESS FOR PREPARING A RUTHENIUM CATALYST

Haren S. Gandhi, Dearborn; Joseph T. Kummer, Ann Arbor, and Mordecai Shelef, Southfield, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 318,338, Dec. 26, 1972, Pat. No. 3,835,069. This application Nov. 29, 1973, Ser. No. 420,023
Int. Cl. B01j 11/08
U.S. Cl. 252—462 7 Claims

1. A method of forming a ruthenium containing catalyst system in which the activity of the catalytic material of the system is not destroyed or severely reduced when the system is exposed to oxidizing conditions of either a prolonged or a sporadic nature, which method comprises the steps of:

reacting ruthenium with a compound selected from the group consisting of alkaline-earth materials, rare earth materials or mixed rare earth materials to form a ruthenate compound;

forming said ruthenate compound into a finely divided powder;
forming a slurry of said finely divided powder and a gamma alumina containing substance;
depositing said slurry on a suitable catalytic support;
drying said support with said slurry thereon; and
calcining said dry support to set said materials of said slurry remaining on said support after said drying step thereby to produce said catalyst system.

3,880,776

HIGHLY CALCINED SUPPORT FOR CATALYTIC DEHYDROGENATION

E. O. Box, Jr., Bartlesville, Okla., and David A. Uhrick, Columbus, Ohio, assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 151,894, June 10, 1971, abandoned, which is a division of Ser. No. 828,777, May 28, 1969, Pat. No. 3,641,182. This application June 7, 1973, Ser. No. 367,803
Int. Cl. B01j *11/22*
U.S. Cl. 252—466 PT **10 Claims**

1. A catalyst composition suitable for use in the dehydrogenation of a dehydrogenatable hydrocarbon having from 2 to 12 carbon atoms in the absence of free oxygen consisting essentially of

a calcined support consisting essentially of at least one aluminate spinel composition having the formula $M(AlO_2)_2$ or $MO{\cdot}Al_2O_3$, wherein M is selected from the group consisting of Group IIa or Group II*b* metals, said support having been calcined at a temperature in the range of about 1500° to about 2500° F. for from about 1 to about 100 hours; and

at least one Group VIII metal selected from the group consisting of nickel, platinum, palladium, ruthenium, iridium, rhodium, and osmium.

3,880,777

COMPOSITE ELECTRICAL CONTACT MATERIAL COMPRISING AG AND INTERMETALLIC COMPOUNDS

Akira Shibata, Yokohama, Japan, assignor to Chugai Denki Kogyo Kabushiki-Kaisha, Tokyo, Japan

Filed Jan. 4, 1973, Ser. No. 320,888
Claims priority, application Japan, Feb. 15, 1972, 47-15453
Int. Cl. H01b *1/02*
U.S. Cl. 252—514 **3 Claims**

1. A composite electrical contact material comprising an alloy oxidized at a temperature of 700° to 750°C and composed of 84 to 90% by weight of silver, 1.0 to 4.0% by weight of at least two metals selected from the group consisting of zinc, tin and antimony, and at least 0.1% but less than 0.5% by weight of an intermetallic compound consisting of one of the group 2A elements of the Periodic Table with nickel or cobalt, the balance being cadmium.

3,880,778

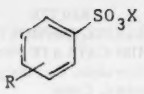
AUTOMATIC DISHWASHING COMPOSITIONS

Ralph House, El Sobrante, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 25, 1973, Ser. No. 364,214
Int. Cl. C11d *1/22, 3/02, 7/10*
U.S. Cl. 252—558 **7 Claims**

1. A low foaming water-soluble detergent composition suitable for use in automatic dishwashing machines consisting essentially of

a. one part by weight of a linear alkylbenzene sulfonate of the formula



in which X is a water-soluble salt forming cation and R is alkyl of 17 to 22 carbon atoms, provided that in at least 65 mol percent of said sulfonates R is a group of the formula

in which R_1 and R_2 are normally attached linear alkyl groups of 2 to 19 carbon atoms and the sum of the carbon atoms in R_1 and R_2 is from 16 to 21, and

b. from 8 to 25 parts by weight of a salt of the formula Y_2SO_4 in which Y is Na^+, Li^+ or NH_4^+.

3,880,779

POLYMERIZATION PROCESS OF VICINAL ALKYLENE OXIDES AND POLYMERIZATION CATALYST THEREFOR

Kinya Unoura, Amagasaki; Atsushi Oda, Toyonaka; Yoshimasa Hayashi, Amagasaki; Nobuhiro Kimura, Itami; Tetsuya Nakata, Ibaraki, and Shingo Tokuda, Nishinomiya, all of Japan, assignors to Osaka Soda Co., Ltd., Osaka, Japan

Filed Apr. 12, 1971, Ser. No. 133,430
Claims priority, application Japan, Oct. 30, 1970, 45-96044
Int. Cl. C08g *23/14*
U.S. Cl. 260—2 A **9 Claims**

1. In a process for polymerizing or copolymerizing vicinal alkylene oxides in the presence of a catalyst to form the corresponding homo- or copolymers, the improvement wherein the polymerization or copolymerization reaction is performed in the presence of a catalyst comprising the reaction product performed at a temperature of 100°–300°C. by reacting outside of the polymerization system:

I. at least one metal halide selected from the group consisting of a compound of the formula AlX_3, wherein X means chlorine or bromine, a compound of the formula MX_4, wherein X is as defined above, and M is a metal selected from the group consisting of Ti, Zr, Hf, Si, Ge, and Sn and a compound of the formula SnX_2, wherein X is as defined above, with at least one reactant (II) selected from the phosphorus-containing compounds of the following 11 groups:

II.

(1)

$$(R''O)_3PO$$

wherein R'' is a member selected from the group consisting of, alkyl of 1–12 carbon atoms, halogenated alkyl of 1–12 carbon atoms, alkenyl of 1–12 carbon atoms, and cycloalkyl of 5–7 carbon atoms which may contain an alkyl or alkenyl side chain of 1–4 carbon atoms, the plural R''s optionally being the same or different;

(2)

$$Z(R''O)_2PO$$

wherein R'' is as defined in formula (1), Z is a radical selected from the group consisting of alkyl of 1–8 carbon atoms and aryl;

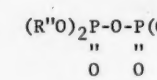
(3)

$$Z_2(R'''O)PO$$

wherein R''' is a member selected from the group consisting of alkyl of 1–12 carbon atoms, halogenated alkyl of 1–2 carbon atoms, alkenyl of 1–12 carbon

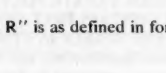
atoms, and cycloalkyl of 5–7 carbon atoms which may contain an alkyl or alkenyl side chain of 1–4 carbon atoms, Z is as defined in formula (2), the plural Z's optionally being the same or different;

(4)



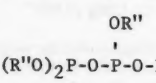
wherein R'' is as defined in formula (1);

(5)



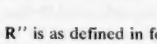
wherein R'' is as defined in formula (1);

(6)



wherein R'' is as defined in formula (1) and Z is as defined in formula (2), the plural Z's optionally being the same or different;

(7)

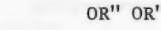


wherein R'' is as defined in formula (1);

(8)

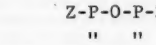
wherein R'' is as defined in formula (1) and Z is as defined in formula (2);

(9)



wherein R''' is as defined in formula (3) and Z is as defined in formula (2), the plural Z's optionally being the same or different;

(10)



wherein R'' is as defined in formula (1); and

(11) combination of a phosphorus compound selected from the group consisting of a phosphorus oxide and compounds containing a phosphorus-halogen linkage, with a compound selected from the group consisting of aliphatic alcohols of 1–12 carbon atoms, aliphatic polyhydric alcohols of 1–12 carbon atoms, epoxids derived from olefins of 2–12 carbon atoms, and dialkyl ethers of 4–8 carbon atoms, provided that when a dialkyl ether is used, said phosphorus oxide is selected as the phosphorus compound, the combination of components forming the esters of oxyacids of phosphorus or P—O—C linkage as the reaction products.

3,880,780

HIGH RESILIENT POLYURETHANE FOAM

Williard L. Ridenour, Madison, and Robert D. McAree, Oxford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 348,292, April 5, 1973, abandoned. This application Sept. 23, 1974, Ser. No. 508,549

Int. Cl. C08g *22/46, 22/06*

U.S. Cl. 260—2.5 AM **12 Claims**

1. A flexible one shot polyurethane foam prepared from a reaction mixture comprised of:

a. a polyether triol having a molecular weight of at least about 4,400 and at least 60percent of primary hydroxyl groups which is the product of sequentially oxyalkylating a trihydroxy alcohol first with propylene oxide and then with ethylene oxide,

b. a polyisocyanate mixture of (1) toluene diisocyanate and (2) a polymethylene polyphenylisocyanate in a weight ratio, (1):(2), from about 75:25 to about 96:4, in an amount sufficient to provide from 0.7 to about 1.25 NCO groups per each hydroxyl group in the reaction mixture,

c. a blowing agent,

d. a reaction catalyst, and

e. an aromatic primary diamine curing agent.

3,880,781

PROCESS FOR PRODUCTION OF CELLULAR OR FOAMED POLYURETHANE FROM POLYETHERS WITH AND WITHOUT CATALYST

John Frederick Chapman; John Henry Cundall, both of Manchester, England; Robert Paul Gentles, Linlithgow, West Lothian, Scotland; Philip Cowey Johnson, and Kenneth Stephenson, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 521,809, Jan. 20, 1966, abandoned, which is a continuation of Ser. No. 257,762, Feb. 11, 1963, abandoned, which is a continuation-in-part of Ser. No. 833,161, Aug. 12, 1959, abandoned. This application May 29, 1969, Ser. No. 834,193

Int. Cl. C08g *22/46, 22/38*

U.S. Cl. 260—2.5 AC **18 Claims**

1. A catalyst-free process for the manufacture of foamed polyurethane products by substantially simultaneously interacting an organic polyisocyanate composition consisting essentially of a diarylmethane diisocyanate and 5–50% by weight of organic polyisocyanate having more than two isocyanato groups to the molecule, a liquid polyether having predominently secondary hydroxyl end groups containing from 3 to 8 hydroxyl groups per molecule and water in the absence of a catalyst for said interaction.

3,880,782

FLUOROCHEMICAL FOAM STABILIZER AND FOAMED ISOCYANATE-DERIVED POLYMERS MADE THEREWITH

George M. Rambosek, Village of Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 840,854, July 10, 1969, Pat. No. 3,635,848, which is a continuation-in-part of Ser. No. 618,035, Feb. 23, 1967, abandoned. This application Mar. 16, 1970, Ser. No. 20,012The portion of the term of this patent subsequent to Jan. 18, 1989, has been disclaimed.

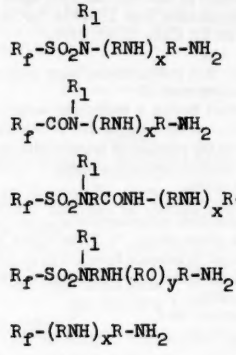
Int. Cl. C08g *22/44, 33/04*

U.S. Cl. 260—2.5 AG **16 Claims**

1. In a process for preparing a foamed isocyanate-derived polymer selected from the group consisting of polyurethane and polyisocyanurate-polyurethane, the improvement comprising forming said polymer in the presence of a foam stabilizing amount in the range of 0.1 to 20 weight percent of a foam stabilizer comprising a fluoroaliphatic radical-substituted compound having a plurality of active hydrogen atoms and 4 to 68 weight percent fluorine, said fluoroaliphatic

radical having 4 to 20 carbon atoms, terminating in at least three fully fluorinated carbon atoms, and containing 40 to 78 weight percent fluorine.

4. The process according to claim 1, wherein said foam stabilizer is selected from the group consisting of



$R_f-(RNH)_xR-NH_2$

where R_1 is hydrogen or alkyl of 1–6 carbon atoms, R is alkylene of 2–12 carbon atoms, x is zero or an integer of at least 1, y is an integer of at least 1, and R_f is perfluoroalkyl of 4–12 carbons.

3,880,783

TRANSPARENT MOULDING COMPOSITION OF A POLYCARBONATE AND A RESIN

Volker Serini, Krefeld; Gert Humme; Karl-Heinz Ott, both of Leverkusen; Wolfgang Cohnen, Krefeld-Uerdingen, and Hugo Vernaleken, Krefeld-Bockum, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 3, 1973, Ser. No. 421,233

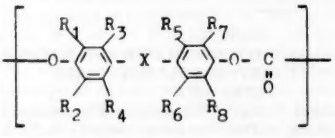
Claims priority, application Germany, June 9, 1973, 2329646

Int. Cl. C08g *39/10*

U.S. Cl. 260—3 **15 Claims**

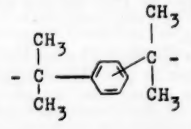
1. A transparent moulding compound which comprises

a. 10 to 95 % by weight of a transparent aromatic polycarbonate the linear chains of which consist to at least 50 % of recurrent structural units of formula (1)



(1)

in which R_1 to R_8, which may be the same or different, represent hydrogen or alkyl and X represents a single bond, a C_1 to C_{12} alkylene or alkylidene group or



if at least one of the R_1 to R_8 substituents is an alkyl group or represents a C_6 to C_{12} alkylene or alkylidene group if R_1 to R_8 is hydrogen

and

b. 5 to 90 % by weight of a transparent rubber and/or a transparent resin which contains rubber, the difference in refractive indices between (a) and (b) being not more than 0.010.

3,880,784

SOLUTIONS OF DIISOCYANATE POLYADDITION PRODUCTS WHICH CONTAIN FREE SEMIACETALS AND WHICH ARE STABLE IN STORAGE

Kuno Wagner, Leverkusen-Steinbuechel, and Walter Schröer, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 21, 1973, Ser. No. 427,290

Int. Cl. C08g *22/04*

U.S. Cl. 260—13 **5 Claims**

1. A stable solution of a high-molecular weight diisocyanate polyaddition product in a solvent mixture, said solvent mixture comprising

a. an inert organic solvent,

b. an alcohol selected from the group consisting of primary and secondary alcohols, and

c. a semiacetal of formaldehyde of the formula

$$(HO)_p—R'—(O—CH_2OH)_q$$

wherein

R is a radical containing up to about 20 carbon atoms, having a valency of $(p+q)$ and being selected from the class consisting of aliphatic, cycloaliphatic, araliphatic and trialkylamine groups and such groups substituted with alkylated nitrogen atoms and

wherein

p and q are integers,

$(p+q)$ is from 1 to 6, and

p is from 0 to 3,

the alcohol being present in the mixture in a proportion of at least 25 percent by weight, based upon the dissolved diisocyanate polyaddition product.

3,880,785

STENCIL-PRINT COLOUR

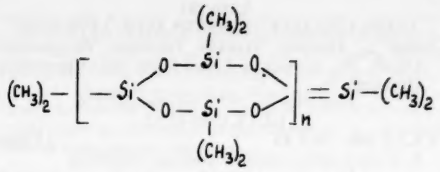
Eduard Karlovich Piiroya, Bulvar Karla Marxa, 15, kv. 9, Tallinn, U.S.S.R.; Mati Endel-Agustovich Pyldsaar, ul. Sovetskaya 7, kv. 78, Ivanovo, U.S.S.R., and Anti Khelldurovich Viikna, ul. Tatari 15, kv. 8, Tallinn, U.S.S.R.

Continuation-in-part of Ser. No. 378,902, July 13, 1973, abandoned, which is a continuation of Ser. No. 212,670, Dec. 27, 1971, abandoned. This application Dec. 27, 1973, Ser. No. 428,862

Int. Cl. C09d *11/10*

U.S. Cl. 260—22 S **14 Claims**

1. A stencil-print colour which comprises a varnish (1) selected from the group consisting of linseed varnish which is essentially polymerized linseed oil, pentaphthalic varnish which is essentially polypentaerythritolphthalate modified by a vegetable oil and dissolved therein, polyglycerol-phthalate modified with a vegetable oil and dissolved therein, and a mixture of the above-mentioned varnishes; a resin (2) selected from the group consisting of phenol-formaldehyde resins and colophony-modified phenol-formaldehyde resins; metal salts (3) of higher carboxylic acids having more than six carbon atoms; pigments (4); an organic solvent (5); and a mixture of polymethylspirocyclosiloxanes (6) of the formula:



where $n = 2$ to 7, with an average molecular weight of from 800 to 1,500; the colour components being taken in the following proportions (parts by weight):

varnishes (1)	100
resin (2)	75–125
metal salts (3) of higher carboxylic acids	2–25
pigments (4)	5–120
organic solvent (5)	75–175
mixture of polymethylspirocyclosiloxanes (6)	1–20.

3,880,786

GRAFT COPOLYMER PREPARATION

Alan Arthur John Feast, Eastleight, and Peter Ingram, Southampton, both of England, assignors to The International Synthetic Rubber Company Limited, Southampton, England

Filed Nov. 6, 1972, Ser. No. 303,814

Claims priority, application United Kingdom, Nov. 12, 1971, 52773/71; Dec. 30, 1971, 60641/71

Int. Cl. C08f *19/14, 21/04*

U.S. Cl. 260—23 EM **13 Claims**

1. A process for preparing a graft copolymer from a latex of a polybutadiene of styrene-butadiene rubbery backbone polymer characterized by the steps of:

a. admixing the latex, at least one vinyl aromatic monomer selected from the group consisting of styrene, alphamethyl styrene, methyl styrene and vinyl toluene, at least one unsaturated nitrile monomer selected from the group consisting of acrylonitrile and methacrylonitrile, and nor more than 15 parts by weight per hundred parts by weight of rubber of an emulsifier comprising at least 20% of at least one salt of the general formula

$$CH_3(CH_2)_x(CH_2CH{=}CH)_y(CH_2)_nCOOM$$

where x is zero or an integer, y is an integer and n is an integer of value 2 to 4, the sum of $x + y + n$ being 10 to 18 and M is an alkali metal;

b. graft polymerising the latex mixture at a temperature of at least 50° C., and

c. recovering the graft copolymer.

3,880,787

BENZOTHIAZOLE ACCELERATOR SYSTEMS

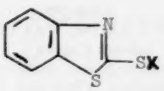
Raymond C. Srail, Parma, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Continuation-in-part of Ser. No. 118,172, Feb. 23, 1971, abandoned. This application Mar. 19, 1973, Ser. No. 342,747

Int. Cl. C08c *11/64, 11/48;* **C08d** *9/00*

U.S. Cl. 260—23.5 R **7 Claims**

1. A composition comprising (1) a sulfur-vulcanizable rubber having from about 0.5 to 50% by weight of olefinic unsaturation derived from conjugated diolefins containing from 4 to 6 carbon atoms, (2) sulfur, (3) a metal vulcanization activator selected from the group consisting of metal oxides, hydroxides, and salts wherein the metal is selected from the group consisting of zinc, cadmium, lead, calcium and iron, and (4) an accelerator system consisting essentially of (a) a 2-thiobenzothiazole accelerator of the formula



wherein X is selected from the group consisting of hydrogen, 2-thiobenzothiazole, an amine, alkyl, aryl, alkaryl, halo, nitro, anilino, 5- or 6-membered heterocycles containing oxygen, nitrogen, or sulfur heteroatoms, a monovalent radical selected from the group consisting of ammonia, sodium, and potassium, and a divalent radical selected from the group consisting of calcium, zinc, cadmium, copper and lead, and attached thereto an alkyl, aryl, substituted aryl or a second thiobenzothiazole radical; and (b) an amine-blocked diisocyanate of (i) a heterocyclic amine having a pK dissociation constant of about 4 or below and (ii) a diisocyanate selected from the group consisting of diphenyldiisocyanates and aromatic diisothiocyanates.

3,880,788

MODIFIED NATURAL RESIN BINDER AND PROCESS FOR PREPARATION

Albert Rudolphy, Wiesbaden-Biebrich, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 3, 1972, Ser. No. 294,655

Claims priority, application Germany, Oct. 8, 1971, 2150216; Mar. 19, 1972, 2215235

Int. Cl. C08g *5/22, 37/16;* **C08d** *9/12*

U.S. Cl. 260—25 **14 Claims**

1. A process for the manufacture of an ink binder being a modified natural resin product comprising reacting (a) colophony, wood rosin, tall oil, rosin acids or abietic acid with (b) at least one ethylenically unsaturated monomer having from 2 to 12 carbon atoms and being free from carboxylic groups and anhydride groups, and (c) either a phenol resin which is a condensation product of a phenol with an aldehyde having 1 to 7 carbon atoms or the components of said condensation product at a temperature in the range of 120°to 280°C.

3,880,789

COATING COMPOSITION COMPRISING POLYISOCYANATE, HYDROXYL COMPOUND, AND TAR

Takamasa Ishihara; Hirohumi Tuka, and Shinichi Hasegawa, all of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 4, 1972, Ser. No. 294,948

Claims priority, application Japan, Oct. 5, 1971, 46-78533

Int. Cl. C08g *51/52*

U.S. Cl. 260—28 **7 Claims**

1. A coating composition which comprises a binder containing (1) a polyisocyanate compound selected from the group consisting of tolylenediisocyanate, 1,5-napthylenediisocyanate, 4,4'-diphenylmethanediisocyanate, hexamethylenediisocyanate, xylylenediisocyanate and polymethylenepolyphenylenediisocyanate and a hydroxyl compound and (2) a tar, the tar being a distillation residue having a boiling point of about 200° to 350°C., said residue being produced during the preparation of cresols from cymene, the amount of hydroxyl compound employed being 0.8 to 2.0 equivalents with respect to the number of isocyanate groups contained in said polyisocyanate compound.

3,880,790

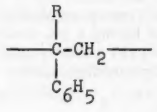
INVESTMENT CASTING WAX COMPOSITION

Robin A. McLaren, Ballwin; Charles A. Alcott, St. Louis, both of Mo., and William E. Nasser, Bartlesville, Okla., assignors to Petrolite Corporation, Wilmington, Del.

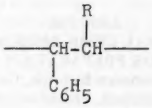
Filed May 14, 1973, Ser. No. 360,044
Int. Cl. C08c *11/70*
U.S. Cl. 260—28.5 A 10 Claims

1. An investment casting wax composition having low shrinkage and increased stiffness comprising at least about 25% of a substituted polystyrene selected from the group consisting of

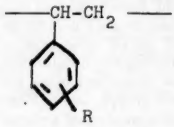
1. polymers or copolymers of alpha-alkylstyrenes having repeating units of the formula



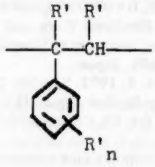
2. polymers or copolymers of β-alkylstyrenes having repeating units of the formula



3. polymers or copolymers of vinyl alkylbenzenes having repeating units of the formula



4. copolymers of styrene with α-alkylstyrenes or vinyl alkylbenzenes or both, wherein the styrene content does not exceed 50%,
5. polymers obtained by alkylating polystyrene wherein at least half the aromatic rings are alkyl substituted, or
6. polymers of polysubstituted styrene having repeating units of the formula



where R is lower alkyl, R′ is H or alkyl and at least two of the R′ groups in (6) are alkyl and *n* is 0 to 3,

said substituted polystyrenes having a Ring and Ball softening point of 50°–150°C. and a molecular weight of about 200–8000,

the remainder of the composition being a wax or wax-like material, with or without other resins and fillers, said composition having a congealing point in the range of 55°–70°C. and low shrinkage and increased stiffness.

3,880,791

CROSS LINKABLE THERMOPLASTIC ADHESIVES

Arthur J. Marcozzi, Franklin Township, Westmoreland County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed May 31, 1973, Ser. No. 365,776
Int. Cl. C08f *45/52*
U.S. Cl. 260—28.5 AS 5 Claims

1. A composition useful for coatings comprising

a. about 25 to 50 percent pitch having a ring-and-ball softening point between about 70° and 200° C

b. about 20 to 40 percent copolymer of ethylene and vinyl acetate in which the ethylene comprises from 50 to 95% by weight

c. about 20 to 40 percent copolymers of ethylene and acrylic acid in which the ethylene comprises from 25% to about 99.9% by weight, having a melt index from about 0.1 to about 400 and

d. about 0.5 to 10% dicumyl peroxide.

3,880,792

ROTOGRAVURE PRINTING PROCESS

Robert W. Faessinger, Media, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 619,210, Feb. 28, 1967, which is a continuation-in-part of Ser. Nos. 424,221, Jan. 8, 1965, abandoned, and Ser. No. 424,223, Jan. 8, 1965, abandoned, and Ser. No. 424,224, Jan. 8, 1965, abandoned, and Ser. No. 424,225, Jan. 8, 1965, abandoned. This application May 4, 1973, Ser. No. 357,348
Int. Cl. C08g *51/24, 51/66*
U.S. Cl. 260—29.2 N 30 Claims

1. In the high speed rotogravure intaglio printing of a fibrous web, the improvement which comprises utilizing, as the printing fluid therein, a low viscosity printing fluid comprising an aqueous solution of a water-soluble, cationic thermosetting resin and a water-soluble dye compatible with said resin, said dye and resin mixture having a stability of from about 1 hour to in excess of 4 months, a transference value of from about 0 to about 4, and a viscosity of less than 20 cps. at 77°F.

3,880,793

EMULSIFIERS FOR EMULSION POLYMERIZATION OF VINYL MONOMERS

Yasuhara Nakayama, Hiratsuka, Japan, assignor to Kansai Paint Company Limited, Hyogo, Japan

Filed Mar. 30, 1972, Ser. No. 239,733
Int. Cl. B01f *17/52*; C08d *3/04, 1/09*; C08f *1/13*
U.S. Cl. 260—29.6 RW 2 Claims

1. In polymerizing in an aqueous medium in the presence of an emulsifying agent a vinyl monomer having a Q value of at least 0.1 determined by Q–*e* scheme to produce an aqueous emulsion of a vinyl polymer, a method wherein said emulsifying agent is an addition product, having an acid number of 20 to 350, neutralized with a base, of a butadiene polymer having a number average molecular weight of 200 to 40,000 and at least one of maleic acid and maleic anhydride, said addition product being used in an amount such that the theoretical acid number relative to the total solids contained in the resultant polymer solution is in the range of 5 to 150.

3,880,794

POLYVINYL CHLORIDE PLASTISOL COMPOSITION

Eiichi Iida, 7, Takashimadai, Kanagawa-ku, Yokohama-shi, Kanagawa-ken, and Toshio Sano, 111, 2-chome, Furuichiba, Kawasaki-shi, Kanagawa-ken, both of Japan, assignors to Nippon Zeon Co., Ltd. and E. C. Chemical Ind. Co., Ltd.

Filed Aug. 24, 1973, Ser. No. 391,313
Int. Cl. C08f *45/34*
U.S. Cl. 260—30.4 R 4 Claims

1. A polyvinyl chloride plastisol composition which comprises a mixture of polyvinyl chloride resin and a plasticizer

together with a cyclic acetal, as gelling agent, said cyclic acetal being selected from the group consisting of dibenzylidene xylitol, dibenzylidene-sorbitol and derivatives thereof wherein the benzene ring is substituted with halogen, an alkyl group of 1–8 carbon atoms or an alkoxy group of 1–8 carbon atoms, the amount of said cyclic acetal being 0.02–1% by weight based on the weight of the mixture of the polyvinyl chloride resin and the plasticizer.

3,880,795

PROCESS FOR THE MANUFACTURE OF POLYCARBONATE SOLUTIONS

Heinrich Haupt, and Hugh Vernaleken, both of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 9, 1973, Ser. No. 331,132

Claims priority, application Germany, Feb. 17, 1972, 2207359

Int. Cl. C08c *11/24*

U.S. Cl. 260—33.8 R **11 Claims**

1. A process for the manufacture of solutions of high molecular weight aromatic polycarbonates suitable for the production of filaments and films, comprising precipitating said polycarbonate, having a molecular weight greater than 30,000, from its solution in a chlorinated hydrocarbon or aromatic hydrocarbon solvent by the addition of a non-solvent for said polycarbonate to the solution and subsequently redissolving the resulting precipitated polycarbonate by evaporating off said non-solvent.

3,880,796

METHOD OF MAKING A NONAQUEOUS ACRYLIC COATING COMPOSITION

Roger M. Christenson, Gibsonia; Thomas R. Sullivan, Natrona Heights; Suryya K. Das, Pittsburgh, and Rostyslaw Dowbenko, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 11, 1972, Ser. No. 296,700

Int. Cl. C08f *47/20;* **C08g** *53/18;* **C08j** *1/46*

U.S. Cl. 260—33.6 UA **9 Claims**

1. A method of preparing a nonaqueous polymeric composition comprising

a. polymerizing a multifunctional dispersion stabilizer and ethylenically unsaturated monomers in the presence of a dispersing liquid which is a solvent for said ethylenically unsaturated monomers to form a non-aqueous dispersion of acrylic polymer and at least 0.5 percent by weight microgel particles, wherein

1. said ethylenically unsaturated monomers comprise
   a. from about 4 to about 30 percent by weight hydroxy-containing ethylenically unsaturated monomer, and
   b. from about 0.5 to about 10 percent by weight ethylenically unsaturated carboxylic acid.
2. said multifunctional dispersion stabilizer is a branched copolymer containing two polymeric segments of which one segment is solvated by said dispersing liquid and said second segment is
   a. an anchor polymer of different polarity to said first segment,
   b. relatively non-solvatable by said dispersion liquid, and
   c. contains pendant groups which are copolymerizable with said ethylenically unsaturated monomers
3. said dispersing liquid consists essentially of liquid aliphatic hydrocarbons having a boiling point in the range of from about 30° to 300°C.
4. said microgel particles
   a. being substantially crosslinked,
   b. being substantially insoluble in tetrahydrofuran
   c. having substantially the same refractive index as that of said acrylic polymer, and
   d. being of size in the range of from about 1 to about 40 microns, and

b. adding active solvent to said nonaqueous dispersion to form a solution of said acrylic polymer containing dispersed microgel particles wherein the ratio of said active solvent to said dispersing liquid is in the range of from about 35:65 to about 90:10.

3,880,797

PROCESS FOR PREPARING COLORED POLYURETHANE

Shigeo Maeda; Minoru Ozutsumi; Isao Niimura, and Hideo Okazaki, all of Tokyo, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

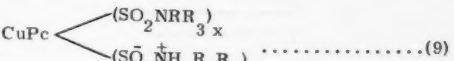
Filed Aug. 10, 1973, Ser. No. 387,504

Int. Cl. C08g *51/66*

U.S. Cl. 260—37 N **6 Claims**

1. A process for preparing a colored polyurethane material, which comprises:

reacting a polyisocyanate compound and a polyhydroxyl compound with a copper phthalocyanine dye of the formula



.....(9)

wherein R represents hydrogen, alkyl or hydroxyalkyl; R_3 represents —E—X_4 wherein E represents a substituted alkylene group containing at least one X_4 group wherein X_4 represents hydroxyl, amino, alkylamino or an alkylamino group substituted with a non-dissociable group; R_4 represents hydrogen or alkyl; R_5 represents alkyl or an alkyl group substituted with a non-dissociable group; x represents an integer from 1 to 4, y represents an integer from 1 to 3 and $x + y$ is 2, 3 or 4, which phthalocyanine dye contains at least one amino group or a hydroxyl group having one active hydrogen atom.

3,880,798

FLUOROCARBON COMPOUNDS

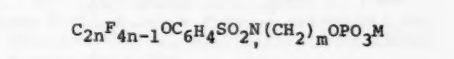
William Roy Deem, Runcorn, and Keith Ogden, Thornton-Cleveleys, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Apr. 20, 1973, Ser. No. 352,988

Int. Cl. C08f *45/04*

U.S. Cl. 260—42.16 **4 Claims**

1. A method of preparing a filled fluorocarbon polymer from a filler and a granular fluorocarbon polymer, both in powder form, comprising treating the filler with a surface-active compound to make it hydrophobic, agglomerating the filler together with the polymer from an aqueous medium, removing the agglomerates from the aqueous medium and drying the agglomerates, wherein the surface-active compound has the formula:



wherein

M is hydrogen, alkali metal, ammonium or alkyl-substituted ammonium,

n is 4, 5 or 6,

R is an alkyl group containing from one to five carbon atoms or hydrogen and

m is an integer from one to six.

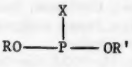
3,880,799

THERMAL OXIDATIVELY STABLE POLYCARBONATE

Thomas J. Hoogeboom, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Continuation-in-part of Ser. No. 320,567, Jan. 2, 1973, abandoned. This application Jan. 2, 1974, Ser. No. 429,571
Int. Cl. C08d *11/04*
U.S. Cl. 260—45.7 P 7 Claims

1. A thermal oxidatively stable polymer composition which is the residue of the condensation reaction of a dihydric phenol, a carbonate precursor and 0.000015 to about 0.05 moles per mole of dihydric phenol of an ester of a phosphorohalidous acid having the following formula:



wherein X is a halogen atom selected from the group consisting of bromine and chlorine and R and R′ are organic radicals independently selected from the group consisting of aryl haloaryl, alkyl cycloalkyl, aralkyl and alkaryl radicals.

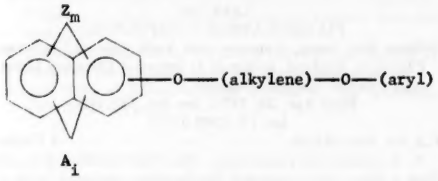
3,880,800

POLYURETHANE PLASTIC COMPOSITIONS CONTAINING BIS-ARYLOXY FLAME RETARDANTS

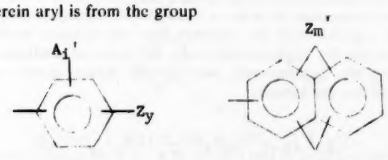
Arnold L. Anderson, Alma, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.

Continuation-in-part of Ser. No. 260,240, June 6, 1972, abandoned. This application Feb. 8, 1973, Ser. No. 330,786The portion of the term of this patent subsequent to Mar. 4, 1992, has been disclaimed.
Int. Cl. C08g *51/60*
U.S. Cl. 260—45.9 R 18 Claims

1. A plastic composition containing polyurethane having incorporated therein a flame retardant which is a bis-aryloxy compound having the formula:



wherein aryl is from the group



Z is selected from the group consisting of bromine or chlorine; *m* and *m′* are integers having a value of 1–7; *y* is an integer having a value of 1–5; *i* and *i′* are integers having a value of 0–2; A is selected from the group consisting of cyano, nitro, lower alkoxy, lower alkyl, fluorine, dialkylamino, phenyl, halo-phenyl, benzyl or halo-benzyl; and alkylene is a straight or branched chain alkylene group having from 1 to 6 carbon atoms.

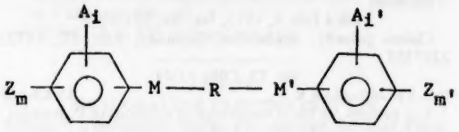
3,880,801

POLYOLEFIN PLASTIC COMPOSITIONS CONTAINING HALOGENATED ARYL COMPOUNDS AS FLAME RETARDANTS

Arnold L. Anderson, Alma, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.

Continuation-in-part of Ser. No. 260,240, June 6, 1972, abandoned. This application Feb. 8, 1973, Ser. No. 330,824The portion of the term of this patent subsequent to July 16, 1991, has been disclaimed.
Int. Cl. C08f *45/60*
U.S. Cl. 260—45.9 R 29 Claims

1. A plastic composition containing polyolefin having incorporated therein a flame retardant which is a halogenated aryl compound having the formula:

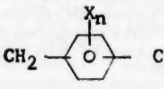


wherein Z is selected from the group consisting of bromine or chlorine; *m* and *m′* are integers having a value of 1–5; *i* and *i′* are integers having a value of 0–2; M and M′ are each independent and are selected from the group consisting of oxygen, nitrogen or sulfur with the proviso that M and M′ cannot concurrently be oxygen in both cases and where M and/or M′ is nitrogen, the formula is

A is selected from the group consisting of chlorine, cyanno, nitro, lower alkozy, lower alkyl, fluorine, dialkylamino, phenyl, halo-phenyl, benzyl, or halo- benzyl; and R is selected from the group consisting of

a. alkylene group having from one to six carbon atoms
b. $CH_2-CH(OH)-CH_2$
c. $CH_2-CH(CH_2OH)-CH_2$
d. $(CH_2)_w-O-(CH_2)_w$ where $w = 1–6$

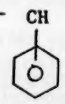
(e)



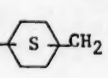
where X = H, Cl, Br
n = 4

(f) $CH_2-C(O)-CH_2$

(g)



(h)



where S = saturated ring

3,880,802

FLAME RETARDANT VINYL CHLORIDE POLYMERS CONTAINING ZINC ZIRCONATE

Elmer D. Dickens, Jr., Richfield, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Aug. 1, 1974, Ser. No. 493,723

Int. Cl. C08f *45/56*

U.S. Cl. 260—45.75 W **4 Claims**

1. A composition comprising a vinyl chloride polymer and zinc zirconate in an amount of from about 0.01 to about 10 weight parts per 100 weight parts of vinyl chloride polymer.

3,880,803

PROCESS FOR STABILIZING POLYMERS

Sietske Keizer, Groningen, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Dec. 11, 1972, Ser. No. 313,636

Claims priority, application Netherlands, Dec. 10, 1971, 7116953

Int. Cl. C08f *45/58*; **C08g** *51/58*

U.S. Cl. 260—45.85 R **20 Claims**

1. A process for stabilizing at least one particulate thermoplastic organic polymer by admixing said polymer with at least one stabilizer for stabilizing said polymer against the effects of heat, light and/or oxygen, said stabilizer having a melting point at least 1°C less than the temperature at which the polymer agglomerates, decomposes or sinters, said stabilizer being in the non-liquid state, wherein said polymer is heated to a temperature at least 0.1°C higher than the melting point of said stabilizer and lower than the agglomeration, decomposition and/or sintering temperature of said polymer, and thereafter said polymer is admixed with from 0.001 to 10% by weight, based on the weight of said polymer, of said stabilizer while said polymer is at about said temperature, and while said stabilizer is at a temperature at least 1°C below the melting point thereof.

3,880,804

METHOD OF STABILIZING OXYMETHYLENE COPOLYMERS

Takami Ishii, Chiba; Taro Suzuki, Ube; Naohisa Takikawa; Sunao Kitamura, both of Onoda; Tadamasa Wakabayashi, and Hiromi Kumahara, Ube, both of Ube, all of Japan, assignors to UBE Industries Ltd., Yamaguchi, Japan

Filed July 22, 1974, Ser. No. 490,280

Claims priority, application Japan, July 23, 1973, 48-80915

Int. Cl. C08g *51/58*

U.S. Cl. 260—45.85 N **4 Claims**

1. A method of stabilizing oxymethylene copolymers which comprises heating an oxymethylene copolymer at a temperature of from about 100° to about 170°C. in an aqueous medium in the presence of a salt selected from the group consisting of sodium and potassium salts of ethylenediaminetetraacetic acid under the conditions of a pH value of from about 4 to about 7.

3,880,805

STABILIZED POLYOLEFIN COMPOSITIONS

Donald G. Needham, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 17, 1970, Ser. No. 47,146

Int. Cl. C08f *45/58*

U.S. Cl. 260—45.95 F **4 Claims**

1. A method of stabilizing a polymonoolefin composition which comprises incorporating in said composition a stabilizing system consisting essentially of 2-hydroxy-4-n-octoxybenzophenone and glycerine thereby forming a thermoplastic composition in which said 2-hydroxy-4-n-octoxybenzophenone is present in an amount of about 0.05 to about 1.0 percent by weight of the thermoplastic composition and said glycerine is present in an amount from about 0.75 to about 1.25 percent by weight of the thermoplastic composition.

3,880,806

CURED COMPOSITIONS OF EPOXY RESINS WITH 2,6-IKETO-N-CARBOXYMETHYLMORPHOLINE

Raymond R. Hindersinn, Lewiston; George C. Hopkins, Clarence, and Charles S. Ilardo, Tonawanda, all of N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 131,456, April 5, 1971, Pat. No. 3,689,456, which is a division of Ser. No. 740,853, June 28, 1968, Pat. No. 3,621,018. This application July 24, 1972, Ser. No. 274,715The portion of the term of this patent subsequent to Sept. 5, 1989, has been disclaimed.

Int. Cl. C08g *30/16*

U.S. Cl. 260—47 EN **5 Claims**

1. A cured composition comprising an epoxy resin which contains adjacent carbon atoms to which oxirane oxygen is attached and a curing amount of 2,6-diketo-N-carboxymethylmorpholine.

3,880,807

REACTION OF FURFURALDEHYDE AND PYROLYSIS OIL TIRE SCRAP

Lynn Burritt Wakefield; Durward Thomas Roberts, Jr., and Edward Leo Kay, all of Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 16, 1973, Ser. No. 342,245

Int. Cl. C08g *5/00*, *5/04*, *7/00*

U.S. Cl. 260—51 R **2 Claims**

1. A solid rubber tackifier or stabilizer resin which is the reaction product of 5 to 50 parts by weight of furfuraldehyde and 100 parts by weight of tire pyrolysis oil obtained by distillation of vulcanized tire scrap at a temperature in the range of 1000° to 2500° F. which oil has the following analysis (volume percent):

	PER CENT
Alkyl Benzenes	15–25
Phenols	0.1–5
3-Ring Aromatics	0.1–5
Biphenyl and Acenanpthene	5–25
Alkyl Naphthalenes	5–35
Indenes	1–20
Styrene	1–15
Alkylstyrenes and Indans	1–25.

3,880,808

RESINOUS ADHESIVE COMPOSITIONS WITH NITRO- AND CHLORO-NITRO-ALKANES

Walter R. Hausch; John W. Fieldhouse, and Edward L. Kay, all of Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed July 30, 1973, Ser. No. 383,733

Int. Cl. C08g *22/04*; **B32b** *25/00*, *27/40*

U.S. Cl. 260—75 NA **1 Claim**

1. An adhesive composition comprising an organic isocyanate and natural and synthetic elastomers and resins and as an adhesion promoter an aliphatic nitro compound selected from the group consisting of 1-chloro-1-nitropropane, 2-chloro-2-nitropropane and 1,3-dinitrocopentane.

3,880,809

CONTAINER RESISTANT TO HYDROCARBON MATERIALS

Anthony F. Finelli, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 378,115, July 10, 1973, abandoned, which is a continuation of Ser. No. 173,227, Aug. 19, 1971, abandoned, which is a continuation-in-part of Ser. No. 682,517, Nov. 13, 1967, abandoned, which is a continuation-n-part of Ser. No. 324,884, Nov. 19, 1963, abandoned. This application Jan. 14, 1974, Ser. No. 433,183

Int. Cl. C08g *22/10*

U.S. Cl. 260—75 NH **1 Claim**

1. A container having resistance to hydrocarbon materials, as measured by ASTM Method D-471-59T of less than 25 percent volume change formed of a polyurethane having an elongation in excess of 200 percent at −65°F., said polyurethane being the reaction product of a
   1. 1.25 to 2.5 mols of an organic polyisocyanate containing essentially toluene diisocyanate with
   2. 1 mol of a hydroxyl terminated polyester which comprises at least 20 weight percent of a tetramethylene azelate having a molecular weight of about 800 to 3000 and about 80 to 0 weight percent of tetramethylene adipate having a molecular weight of about 800 to about 3000, and
   3. 0.5 to about 0.9 mols of a diamine for each mol of polyisocyanate in excess of that equivalent to the hydroxyl terminated polyester.

3,880,810

ADHESIVE COMPOSITIONS CONTAINING AROMATIC NITRO COMPOUNDS

Walter R. Hausch; John W. Fieldhouse, and Edward L. Kay, all of Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Arkon, Ohio

Filed July 30, 1973, Ser. No. 383,760

Int. Cl.[2] C08G *22/16, 22/04*

U.S. Cl. 260—77.5 R **1 Claim**

1. An adhesive composition comprising an organic isocyanate and natural and synthetic elastomers and resins and as an adhesion promoter a compound selected from the group consisting of o-nitrophenol, p-nitrophenol, o-nitroanisole, p-nitroanisole, 2,4-dinitrophenol, and 2-chloro-4-nitrobenzoic acid.

3,880,811

POLYIMIDES

Josef Kaupp, Aschaffenburg, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Apr. 17, 1972, Ser. No. 244,887

Claims priority, application Germany, Apr. 17, 1971, 2118690

Int. Cl. C08g *20/00*

U.S. Cl. 260—78 UA **7 Claims**

1. A process for the preparation of polyfunctional basic succinimides which contain I) pendant primary or or II) pendant primary and secondary amine groups in the molecule which comprises reacting A) the acid or acid anhydride groups of a telomer of a) maleic acid or maleic anhydride and b) at least one olefinically unsaturated monomer, said monomer of the telomer being 1) an aliphatic mono-olefin having 2 to 9 carbon atoms, 2) an aromatic or heterocyclic vinyl compound, or 3) an acrylic acid derivative selected from the group consisting of esters, amides and nitriles, with avoidance of substantial cross-linking, with B) an excess of at least one polyamine containing two primary amine groups, or C) first partially with at least one monoamine and then with an excess of at least one said polyamine, said telomer having an average molecular weight of 400 to 3000 and between 0.08 and 1.5 carboxy groups per 100 molecular weight units.

3,880,812

POLY(ALKYLENETRIMELLITATE IMIDES) AND METHOD OF PREPARATION

Herbert S. Golinkin, and Robert G. Keske, both of Naperville, Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Jan. 11, 1974, Ser. No. 432,569

Int. Cl. C08g *20/32*

U.S. Cl. 260—78.3 R **10 Claims**

1. Poly(alkylenetrimellitate imide) having an I.V. of at least 0.3 dl/g at 25°C and 0.5%w/v 60/40 w/w phenol/-1,1,2,2-tetrachloroethane.

3,880,813

PRESSURE SENSITIVE ADHESIVES

Günter Guse, and Hanns Georg Pietsch, both of Hamburg, Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Germany

Division of Ser. No. 60,629, Aug. 3, 1970, Pat. No. 3,690,937. This application Aug. 1, 1972, Ser. No. 276,927

Claims priority, application Germany, Aug. 8, 1969, 1940549

Int. Cl. C08f *15/00*

U.S. Cl. 260—78.5 BB **3 Claims**

1. A pressure-sensitive adhesive material of an adhesive composition adhering on contact which comprises a copolymer formed from the polymerisation of a monomer mixture of (A) 50–80 percent by weight, based on the total weight of the monomers, of at least one diester of fumaric acid and a saturated monovalent aliphatic alcohol containing from 3–12 carbon atoms; (B) 18–40 percent by weight, based on the total weight of the monomers, of at least one vinyl ester of a saturated aliphatic monocarboxylic acid copolymerizable with (A); (C) from 0.5 to 15 percent by weight, based on the total weight of the monomers, of at least one monoolefinic polar compound copolymerizable with (A) and (B) selected from the group consisting of monoesters of fumaric, maleic or itaconic acid with monovalent saturated aliphatic alcohols of from 1 to 8 carbon atoms, maleic acid anhydride, crotonic acid, itaconic acid, and methylene glutaric acid, and (D) from 0.1 to 10 percent by weight, based on the total weight of the monomers, of at least one mono-olefinic compound copolymerizable with (A), (B), and (C), said compound having a self cross-linkable epoxy group selected from the group consisting of glycidyl esters of acrylic and methacrylic acids, said epoxy group of (D) being at least partially cross-linked.

3,880,814

GEL CHROMATOGRAPHY MATERIAL AND PREPARATION THEREOF

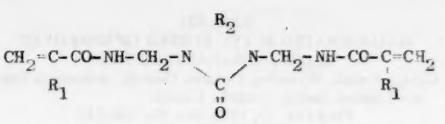
Kiyoshi Mizutani, No. 3-19, 3-chome, Kamikizaki, Saitama-Prefecture, Japan

Filed Feb. 2, 1971, Ser. No. 112,048

Int. Cl. C08f *3/38, 3/44, 3/48*

U.S. Cl. 260—78.5 R **1 Claim**

1. A process for preparing a cross-linked polymeric gel chromatography material, which comprises subjecting at least one ethylenically unsaturated compound selected from the group consisting of acrylamide, methacrylamide, acrylic acid, methacrylic acid, itaconic acid, maleic acid and bisacrylamide, and at least one compound having the formula:



wherein R_1 represents a hydrogen atom or a methyl group and R_2 represents an ethylene or trimethylene group, the ratio of the urea compound to the ethylenically unsaturated compound being 2 : 98 to 60 : 40, to suspension polymerization, which is effected in a suspension of an aqueous or alcoholic solution of said ethylenically unsaturated compound and said urea compound in an inert organic solvent immiscible with the solution and having a specific gravity approximating that of the reactant solution, in the presence of a free radical initiator in the range of 0.1 to 10 percent based on the weight of the reactant to be polymerized at a temperature of 50° to 90°C while stirring, and continuing polymerization until gelatin occurs.

3,880,815

ARYLENE SULFIDE POLYMERS

Charles W. Moberly, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 19, 1973, Ser. No. 416,818
Int. Cl. C08g *23/00*
U.S. Cl. 260—79.1 **16 Claims**

1. A method of producing a polymer which comprises:

a. forming a composition by contacting at least one polyhalo-substituted aromatic compound within the halogen atoms are attached to aromatic ring carbon atoms, at least one compound selected from the group consisting of carbon disulfide and carbon oxysulfide, at least one base selected from the hydroxides of lithium, sodium, potassium, rubidium, cesium, magnesium, calcium, strontium and barium and the carbonates of sodium, potassium, rubidium and cesium and at least one organic amide; and b. maintaining at least a portion of said composition at polymerization conditions to produce said polymer.

3,880,816

UNSYMMETRICAL DISULFIDES AS PREMATURE VULCANIZATION INHIBITORS

Roger J. Hopper, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 2, 1973, Ser. No. 375,590
Int. Cl. C08c *11/54;* **C08d** *9/00*
U.S. Cl. 260—79.5 B **11 Claims**

1. A composition comprising a sulfur vulcanizable diene rubber containing a compound selected from the group consisting of retarders having the following structural formulae

$$RSSCCl_3 \quad (I)$$

and

$$Cl_3CSSR^1SSCCl_3 \quad (II)$$

wherein R is a radical selected from the group consisting of alkyl (1 to 20 carbon atoms), cycloalkyl (5 to 20 carbon atoms), aralkyl (7 to 20 carbon atoms), aryl (6 to 20 carbon atoms), and alkylaryl (7 to 20 carbon atoms), R^1 is selected from the group consisting of unsubstituted and mono archloro substituted xylylene radicals, acyclic divalent hydrocarbon radicals (3 to 20 carbon atoms), and cyclic divalent hydrocarbon radicals (5 to 20 carbon atoms) on which the valencies may or may not be attached to the ring itself, and wherein the valencies on both the acyclic and cyclic radicals are separated by at least one carbon atom.

3,880,817

PROCESS OF PREPARING A SULPHUR-CURABLE POLYMER OF ETHYLENE AND AT LEAST ONE OTHER ALPHA-ALKENE

Cornelis E. P. V. Van Den Berg, Geleen, and Leonard J. G. Tummers, Born, both of Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Continuation of Ser. No. 5,096, Jan. 22, 1970, abandoned, which is a continuation of Ser. No. 21,503, May 15, 1969, abandoned. This application Sept. 28, 1972, Ser. No. 293,668
Int. Cl. C08f *15/04*
U.S. Cl. 260—80.7 **10 Claims**

1. In a process for preparing a vulcanizable polymer of 20 – 75 percent by weight of ethylene, 24 – 79 percent by weight of propylene, and at least 0.5 percent by weight of at least one aliphatic or alicyclic poly-unsaturated compound, said polymer containing an amount of said poly-unsaturated compound to render said polymer sulphur-curable, wherein a mixture of these monomers is contacted in a liquid distributing agent with a catalyst prepared from an aluminum-halogen compound, a compound of a transition metal which is a halide, an alkoxide, or a chelate of a transition metal of Groups 4 – 6, and an organo-magnesium compound, the improvement comprising using, as said organo-magnesium compound, an organo-magnesium compound having at least one alkyl or cycloalkyl group attached thereto, and a second group which is selected from the group consisting of alkyl, cycloalkyl, alkoxy, halogen and hydroxy attached thereto, the molar ratio of aluminum-halogen:transition metal compound being about 2:1 to about 100:1, and the molar ratio of organo-magnesium compound: transition metal compound being about 0.1 to about 200 and the molar ratio of aluminum-halogen compound:organo-magnesium compound being about 0.25 to about 50.

3,880,818

PHYSIOLOGICALLY COMPATIBLE PLASTIC CONTACT LENSES AND A METHOD FOR THEIR PRODUCTION

Mitchel Shen, 615 Parkside Ct., Kensington, Calif. 94707; Robert B. Mandell, 69 Sullivan Dr., Moraga, Calif. 94556, and Lawrence Stark, 3081 Buena Vista Way, Berkeley, Calif. 94708

Continuation-in-part of Ser. No. 215,137, Jan. 3, 1972, abandoned. This application Sept. 28, 1973, Ser. No. 401,668
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.75 **3 Claims**

1. A physiologically compatible contact lens comprising a three-dimensional acrylic-type polymer consisting essentially of mixed ester monomers of the formula

$$R^1R^2C{=}CR^3CO_2Z$$

wherein R^1 and R^2 are the same or different and are selected from hydrogen, methyl groups and ethyl groups; R^3 is selected from hydrogen and methyl groups; and Z is selected from alkyl groups having 1–11 carbon atoms, hydroxyalkyl groups having 1–11 carbon atoms, and alkoxyalkyl groups selected from $-CH_2CH_2OY$, $-CH_2CH(OY)CH_3$, $-CH_2CH_2CH_2OY$, $-CH_2(CH_3)CH_2OY$ and $-CH_2CH_2CH_2CH_2OY$ wherein Y is an alkyl group with from 1–7 carbon atoms, and mixtures thereof, with from 10–75 mole percent of the groups designated Z being selected from hydroxyalkyl and alkoxyalkyl groups but in no event do said hydroxyalkyl groups constitute more than 45 mole percent of said groups, and said polymer including from 0.1 to 3 moles of a divinyl compound cross-linking component having a molecular weight of from 70–400 per 100 moles of monomers.

3,880,819

COPOLYMERIZATES OF ETHYLENE AND/OR HIGHER ALPHA-OLEFINS WITH NON-CONJUGATED DIOLEFINS AND PROCESS FOR PRODUCING THE SAME

Giulio Natta; Giorgio Mazzanti; Alberto Valvassori, all of Milan, Italy, and Guido Sartori, Roselle, N.J., assignors to Montecatini Edison S.p.A., Milan, Italy

Continuation of Ser. No. 676,017, Oct. 18, 1967, abandoned, which is a continuation-in-part of Ser. Nos. 485,933, Sept. 8, 1965, abandoned, and Ser. No. 243,728, Dec. 11, 1961, abandoned, and Ser. No. 151,206, Nov. 9, 1961, abandoned. This application Apr. 14, 1972, Ser. No. 244,309

Claims priority, application Italy, Nov. 14, 1960, 19538/60; Dec. 15, 1961, 22577/61; Sept. 8, 1964, 19286/64

Int. Cl. C08f *15/04, 15/40*

U.S. Cl. 260—80.78 **9 Claims**

1. A process for producing elastomeric copolymers of non-conjugated diolefins containing at least one terminal unsaturation of vinyl type and from five to 15 carbon atoms with at least one monoolefin selected from the group consisting of ethylene and aliphatic alpha-olefins containing from three to eight carbon atoms, said copolymers being essentially linear and amorphous under X-rays examination, completely extractable with boiling n-heptane, made up of macromolecules containing copolymerized units of all of the starting monomers and in which practically all of the copolymerized diolefin units are polymerized 1, 2 and have unsaturations in side groups, said copolymers having a molecular weight higher than 20,000 and being readily sulfur-vulcanizable to synthetic rubbers having low deformation at break, which process comprises copolymerizing a mixture of the monomers, one of which is a non-conjugated diolefin, in a reaction mixture which consists essentially of the monomers mixture in the liquid state or consists of an inert hydrocarbon solvent, in contact with a catalyst prepared by mixing hydrocarbon-soluble compounds of vanadium selected from the group consisting of vanadium triacetylacetonate, vanadyl diacetylacetonate, vanadyl halogen-acetylacetonates, tetrahydrofuranates and dialkyl etherates of vanadium trichloride, vanadium tetrachloride and vanadyl trichloride, and pyridinates, aminates and quinolinates of vanadium trichloride, vanadium tetrachloride and vanadyl trichloride, with at least one alkyl metal halide selected from the group consisting of dialkyl aluminum halides and alkyl aluminum dihalides in which the alkyl groups contain from one to six carbon atoms, in a molar ratio of the alkyl metal halide to vanadium compound comprised between two and 30, both the preparation of the catalyst and the copolymerization being carried out at a temperature between −80°C and 0°C, and the concentration of the monomers to be copolymerized being maintained substantially constant during the copolymerization reaction.

3,880,820

METHOD FOR PRODUCING THERMOPLASTIC RESIN

Hisatake Sato, Yokohama, Japan, assignor to Nippon Oil Company, Limited, Tokyo, Japan

Filed Feb. 11, 1974, Ser. No. 441,134

Claims priority, application Japan, Feb. 15, 1973, 48-18677

Int. Cl. C08f *15/04, 15/42*

U.S. Cl. 260—82 **8 Claims**

1. A method for producing thermoplastic resins which have excellent properties as the adhesive base materials for pressure-sensitive adhesives and hot-melt adhesives which comprises the steps of:

heating a C_5 petroleum oil fraction, having a boiling point of 20°–100° C. and obtained by the thermal or catalytic cracking of petroleum, to a temperature in the range of 100°–300° C. whereby a Diels-Alder reaction occurs;

separating the unreacted C_5 component from the resulting fraction; and then

polymerizing the resulting fraction in the presence of a Friedel-Crafts catalyst.

3,880,821

HALOGENATED BUTYL RUBBER OF IMPROVED SCORCH CHARACTERISTICS

George Feniak, Wyoming, Ontario, Canada, assignor to Polysar Limited, Sarhia, Ontario, Canada

Filed Oct. 23, 1973, Ser. No. 408,542

Claims priority, application Canada, Nov. 24, 1972, 157388

Int. Cl. C08d *9/04;* **C08c** *11/34*

U.S. Cl. 260—85.3 H **7 Claims**

1. A vulcanizable composition having improved scorch characteristics which comprises a polymeric component comprising halogenated butyl rubber and a scorch retarding agent selected from at least one of the free acid and the aluminum, barium, calcium and magnesium salts of an oligomer of linoleic acid, said scorch retarding agent being present in an amount from about 0.5 parts to about 5 parts by weight per 100 parts by weight of said polymeric component.

3,880,822

MODIFIED POLYMER COMPOUNDS AND PROCESS FOR THE PREPARATION THEREOF

Emilio Perrotti, Milanese, and Federico Maspero, Milan, both of Italy, assignors to Snam Progetti, S.p.A. Milanese, Italy

Filed Apr. 14, 1972, Ser. No. 244,022

Claims priority, application Italy, Apr. 15, 1971, 23185/71

Int. Cl. C08d *5/02*

U.S. Cl. 260—94.7 N **1 Claim**

1. A process for the preparation of modified polyisoprene which comprises contacting a solution of polyisoprene in an inert solvent for polyisoprene and nitrogen oxide or an aqueous suspension of polyisoprene with nitrogen oxide in the presence of a $RhCl(P\phi_3)_3$ catalyst.

3,880,823

PROCESS FOR PREPARING PEPTIDES USING N-HYDROXY SUCCINIMIDE MONO- AND DICHLOROACETATE ESTERS

Akira Hagitani, Tokyo; Ichiro Muramatsu, Osaka; Shumpei Sakakibara, Kobe; Jinnosuke Abe, Ohhito, and Tetsuo Watanabe, Tokyo, all of Japan, assignors to Toyo Jozo Kabushiki Kaisha, Ohhito, Shizuoka, Japan

Continuation-in-part of Ser. No. 667,662, Sept. 14, 1967, Pat. No. 3,541,084. This application Aug. 24, 1970, Ser. No. 66,613

Claims priority, application Japan, Sept. 16, 1966, 41-60768The portion of the term of this patent subsequent to Sept. 14, 1987, has been disclaimed.

Int. Cl. C07c *103/52;* **C07g** *7/00;* **C08h** *1/00*

U.S. Cl. 260—112.5 **2 Claims**

1. A process for the production of a deptide having the general formula:

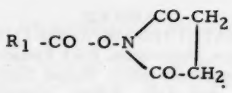
$$R_2—CO—NH—R_3$$

wherein:

R_2 is a member selected from the group consisting of α-lower alkyl-, phenyl- and benzyl- α-amino acetic acid residues N-protected with carbo-benzoxy groups; and

R_3 is an amino acid residue, said process comprising:

reacting in an inert organic solvent at a temperature of from about −5°C to room temperature, a first compound having the general formula:

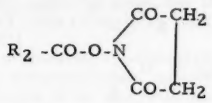


wherein:

R_1 is a member selected from the group consisting of a monochloromethyl and a dichloromethyl group, with a second compound having the following general formula: R_2—COOH

wherein:

R_2 has the same meaning as hereinbefore described, wherein the molar ratio of said first compound to said second compound is from about 1.0 to about 2 moles of said first compound per 1 mole of said second compound, said reaction being conducted in the presence of from about 1.0 to about 3.0 moles of a tertiary organic amine per 1 mole of said second compound to yield a succinimide ester compound having the general formula:



wherein:

R_2 has the meaning hereinbefore described; and subsequently reacting said succinimide compound with an amino compound in a ratio of from 1 to 2 moles of said succinimide compound per 1 mole of said amino compound, said amino compound being represented by the following general formula:

R_3—NH_2

said reaction being conducted in the presence of from 1 to 3 moles of a tertiary organic amine per 1 mole of said amino compound wherein:

R_3 has the same meaning hereinbefore described, in said inert organic solvent at a temperature of from about −2° C to room temperature to thereby yield the desired dipeptide expressed by said initial formula.

3,880,824

GLUTEN LIPID COMPLEXES AND PROCESS FOR PREPARING SAME

Ganta V. Rao, and Oliver B. Gerrish, Sr., both of Hutchinson, Kans., assignors to Far-Mar-Co., Inc., Hutchinson, Kans.

Filed July 18, 1972, Ser. No. 272,892
Int. Cl. A23l *1/10;* **A21d** *2/36*
U.S. Cl. 260—112 G **42 Claims**

1. A process for preparing vital wheat gluten-lipid complexes comprising the steps of:

a. dispersing finely divided vital wheat gluten in a non-aqueous diluent, said diluent comprising an organic solvent non-reactive with said gluten and the lipid complexing system of (b), and

b. reacting said dispersed gluten at a temperature below the temperature at which gluten denatures with a lipid complexing system selected from the group consisting of

1. fatty acid chlorides and a mild base catalyst which will not denature said gluten,
2. fatty monoglycerides and a mild base catalyst which will not denature said gluten,
3. sorbitan fatty acid esters and a mild base catalyst which will not denature said gluten,
4. lactylic esters of fatty acids and a mild base catalyst which will not denature said gluten,
5. phospholipids and a mild base catalyst which will not denature said gluten,
6. lactylic esters of fatty acids in a pH 4 to less than 7 environment, and
7. phospholipids in a pH 4 to less than 7 environment.

3,880,825

DES-HIS^2,ALA^2 AND PHE^{3,5} ANALOGS OF LUTEINIZING HORMONE RELEASING FACTOR

Shunpei Sakakibara, and Terutoshi Kimura, both of Osaka, Japan, assignors to Daiichi Seiyaku Co., Ltd., Tokyo, Japan

Filed Sept. 25, 1973, Ser. No. 400,699
Claims priority, application Japan, Sept. 26, 1972, 47-96497; Sept. 26, 1972, 47-96498; Sept. 26, 1972, 47-96499
Int. Cl. C07c *103/52;* **C07g** *7/00;* **A61k** *27/00*
U.S. Cl. 260—112.5 **2 Claims**

1. A compound of the formula:

(pyro) Glu-Ala-Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-NH_2 which is biologically active in decreasing the release of a luteinizing hormone.

3,880,826

VASOACTIVE INTESTINAL PEPTIDE

Sami I. Said, 5323 Harry Hines Blvd., Dallas, Tex. 75235, and Viktor Mutt, 18 Jungfrudansen, 17156 Solna, Sweden

Continuation-in-part of Ser. No. 181,444, Sept. 17, 1971. This application Nov. 20, 1973, Ser. No. 417,605
Int. Cl. C07c *103/52;* **A61k** *27/00*
U.S. Cl. 260—112.5 **1 Claim**

1. The novel polypeptide, V.I.P., having the following structure:

L-His-L-Ser-L-Asp-L-Ala-L-Val-L-Phe-L-Thr-L- Asp-L-Asn-L-Tyr-L-Thr-L-Arg-L-Leu-L-Arg-L-Lys-L-Gln-L-Met-L-Ala-L-Val-L-Lys-L-Lys-L-Tyr-L-Leu-L-Asn-L-Ser-L- Ile-L-Leu-L-Asn-NH_2.

3,880,827

ANTIBIOTIC BLUENSIN AND METHOD OF PRODUCTION

Thomas E. Eble, Kalamazoo, and Le Roy E. Johnson, Kalamazoo Township, Kalamazoo County, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 7, 1961, Ser. No. 129,739
Int. Cl. C07g *3/00;* **C07c** *129/18*
U.S. Cl. 260—210 AB **10 Claims**

6. A member selected from the group consisting of bluensin, an antibiotic having the following physical and chemical characteristics:

1. a basic substance effective in inhibiting the growth of Gram negative and Gram positive bacteria, which in its essentially pure form is characterized by having one guanidine group, by a negative Maltol test, a positive Sakaguchi test, and a negative Biuret test; by solubility in water and relative insolubility in organic solvents; by forming a sulfate salt having an optical rotation $[\alpha]_D$ of −87° in water, and a dihydrochloride salt having an optical rotation $[\alpha]_D$ of −92° in water and a calculated formula $C_{21}H_{41}N_5O_{14}.2HCl$; by a papergram pattern as follows: ,260

Solvent System		Rf Range
1 -	1-butanol:water (84:16)	0.0 – 0.15
2 -	1-butanol:water (84:16) plus 0.25% p-toluenęsulfonic acid	0.0 – 0.15
3 -	1-butanol:acetic acid:water (2:1:1)	0.5 – 0.25
4 -	1-butanol:water (84:16) plus 2% piperidine	0.0 – 0.15
5 -	1-butanol:water (96:4)	0.2 – 0.9
6 -	1-butanol:water z(96:4) plus 0.25% p-toluenesulfonic acid	0.05 – 0.25
7 -	1-butanol:water (84:16) plus 2% p-toluenesulfonic acid	0.05 – 0.25
8 -	methanol:water containing 3% NaCl (80:20)	0.4 – 0.65;

by lack of significant ultraviolet absorption; and by the following infrared absorption bands for the sulfate salt, when suspended in a mineral oil mull, expressed in reciprocal centimeters: 3350 – 2950, 1695, 1655, **1610**, 1140 – 960, 850, 760; and

2. the acid addition salts of said basic substance.

3,880,828

ANTIBIOTICS 66-40B AND 66-40D FROM MICROMONOSPORA INYOENSIS

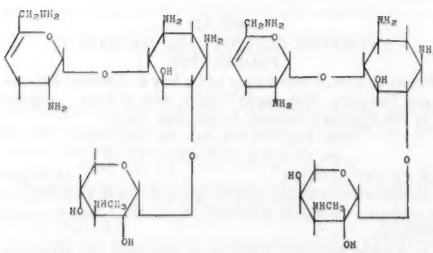
Alan K. Mallams, West Orange; Richard W. Tkach, Linden; Marvin J. Weinstein, and Gerald H. Wagman, both of East Brunswick, all of N.J., assignors to Schering Corporation, Bloomfield, N.J.

Filed Feb. 23, 1973, Ser. No. 335,185

Int. Cl. C07c *47/18*

U.S. Cl. 260—210 AB **4 Claims**

1. Antibiotic 66–40B and Antibiotic 66–40D having the following structural formulae respectively:



including mineral acid addition salts, Schiff base-oxazolidine derivatives and solvates of such compounds, each of said antibiotics being free of substances coproduced therewith.

3,880,829

N(6)-DISUBSTITUTED ADENOSINE COMPOUNDS

Wolfgang Kampe, Heddesheim; Erich Fauland; Kurt Stach, both of Mannheim-Waldhof; Harald Stork, Mannheim-Feudenheim, and Felix Helmut Schmidt, Mannheim-Seckenheim, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim-Waldhof, Germany

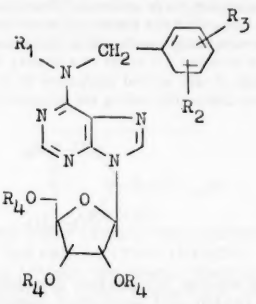
Filed Sept. 4, 1973, Ser. No. 393,859

Claims priority, application Germany, Sept. 9, 1972, 2244328

Int. Cl. C07d *51/54*

U.S. Cl. 260—211.5 R **26 Claims**

1. N(6)-disubstituted adenosine compound of the formula:



wherein

R_1 is lower alkyl of up to 8 carbon atoms substituted by at least one of hydroxyl, alkoxy or acyloxy of up to 8 carbon atoms each; cycloalkyl of from 3 to 9 carbon atoms; or lower alkenyl of up to 8 carbon atoms;

R_2 and R_3 are individually hydrogen, halogen, nitro, lower alkyl, lower alkoxy or lower alkylthio of up to 8 carbon atoms; and R_4 is hydrogen or acyl of up to 8 carbon atoms;

and the pharmacologically acceptable salts thereof.

3,880,830

PROCESS FOR ACYLATING FUNCTIONAL GROUPS BEARING ACTIVE HYDROGEN WITH ISOPROPENYL ESTERS OF LONG-CHAIN FATTY ACIDS

William N. Marmer; Samuel Serota, both of Philadelphia, and Gerhard Maerker, Oreland, all of Pa., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sept. 21, 1972, Ser. No. 290,933

Int. Cl. C08b *3/02*

U.S. Cl. 260—212 **11 Claims**

8. A process for acylating fibrous cellulosic materials, chemical compounds and other substances which bear a hydrogen atom directly attached to an atom selected from the group consisting of nitrogen, sulfur and oxygen, comprising the steps of:

a. forming an acylating agent by reacting for about 5 to 10 minutes at a temperature of from about - 12° to 30°C an isopropenyl ester containing from about 9 to 22 carbon atoms and an oxy acid that is soluble in the reaction medium and capable of liberating acetone in the formation of the acylating agent, the molar ratio of isopropenyl ester to oxy acid ranging from about 1:1 to about 2:1, said reaction being conducted in an organic solvent of low dielectric constant which does not react with the acylating agent and in which both the acylating agent and the nonfibrous materials are soluble;

b. combining the acylating agent and the substance to be acylated; and

c. allowing the acylating agent and the substance to be acylated to react for from 1 to 30 minutes at a temperature of from about 0° to about 30°C, the molar ratio of acylating agent to the substance being acylated ranging from about 1:1 to 1:15 when the substance is a chemical compound and from about 1:1 to about 40:1 when the substance is a fibrous cellulosic material.

3,880,831

PROCESS OF PRODUCING CARBAMOYLALKYL DERIVATIVES OF HIGH MOLECULAR COMPOUNDS

Ryoichi Senju, and Mitsuo Higuchi, both of Fukuoka, Japan, assignors to Ryoichi Senju, Fukuoka-shi, Japan

Filed Jan. 2, 1974, Ser. No. 430,242

Claims priority, application Japan, Jan. 18, 1973, 48-8051

Int. Cl. C08b *11/20, 19/06;* **C08f** *27/16*

U.S. Cl. 260—232 **13 Claims**

1. A process of producing a carbamoylalkyl derivative of a high molecular compound which comprises hydrolyzing a cyanoalkyl derivative of the high molecular compound with hydrogen peroxide in an alkaline state in the presence of iodine ions.

3,880,832

STARCH ETHER DERIVATIVES AND PREPARATION THEREOF

Martin M. Tessler, Edison, N.J., assignor to National Starch and Chemical Corporation, New York, N.Y.

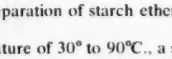
Filed Mar. 21, 1974, Ser. No. 453,320

Int. Cl. C08b *19/04*

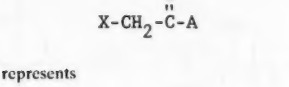
U.S. Cl. 260—233.3 R **6 Claims**

1. A method for the preparation of starch ethers comprising:

a. reacting, at a temperature of 30° to 90°C., a starch base with compound corresponding to the formula



wherein A represents



and

X is chlorine, bromine or iodine,

M is a cation;

R, R_1, and R_2 are radicals selected from the group consisting of alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, alkenyl, substituted alkenyl, phenyl, substituted phenyl, and hydrogen, and R and R_1 cannot both be hydrogen and the total number of carbon atoms in R and R_1 is less than 7; and

y is an integer of from 1 to 3; said reaction being conducted in an aqueous medium at a pH level of from about 9.5 to 13.0; and thereupon

b. isolating the resultant starch ether derivative.

3,880,833

CERTAIN BIS-(3-AMINO-2-OXO-1-AZETIDINYL)-DISULFIDES

Riccardo Scartazzini, Allschwil; Hans Bickel, Binningen; Karl Heusler, Basel, all of Switzerland, and Robert Burns Woodward, Cambridge, Mass., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 12, 1971, Ser. No. 188,511

Claims priority, application Switzerland, Oct. 27, 1970, 15846/70; Mar. 4, 1971, 3196/71

Int. Cl. C07d *25/02*

U.S. Cl. 260—239 A **3 Claims**

1. A compound selected from the group consisting of bis-(cis-3β-amino-2-oxo-4β-azetidinyl)-disulfide and salts thereof.

2. A compound selected from the group consisting of bis-(cis-3β-isopropylidenamino-2-oxo-4β-azetidinyl)-disulfide and salts thereof.

3. The compound bis[cis-2-oxo-3β-phenylacetylamino-4β-azetidinyl)-disulfide.

3,880,834

1-METHYLAZIRIDINE COMPOUNDS AND PRODUCTION THEREOF

Katsumi Kotera, Osaka, and Katsumi Hirose, Hyogo, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Sept. 1, 1972, Ser. No. 285,665

Claims priority, application Japan, Sept. 10, 1971, 46-70185

Int. Cl. C07d *23/06*

U.S. Cl. 260—239 E **1 Claim**

1. The compound 1-methyl-2-(1,2,3,4-tetrahydronaphthyl)aziridine.

3,880,835

5-ARYL-3H-1,4-BENZODIAZEPINE-2-PHOSPHONIC ACIDS AND DERIVATIVES

John H. Sellstedt, King of Prussia, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,626

Int. Cl. C07d *53/06*

U.S. Cl. 260—239 BD **2 Claims**

1. A compound which is diethyl-7-chloro-5-(o-chlorophenyl)-3-methoxy-3H-1,4-benzodiazepine-2-phosphonic acid.

2. A compound which is dimethyl-7-chloro-5-(o-chlorophenyl)-3-methoxy-3H-1,4-benzodiazepine-2-phosphonic acid.

3,880,836

THIOCARBAMYLSULFENAMIDES

Ray D. Taylor, Brecksville, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed May 18, 1972, Ser. No. 254,531

Int. Cl. C07c *155/04;* **C07d** *41/04*

U.S. Cl. 260—239 BF **1 Claim**

1. The compound, N-hexamethylene-N',N'-dicyclohexyl thiocarbamylsulfenamide.

3,880,837

6-HYDRAZONO PENICILLINS AND METHOD OF PREPARATION THEREOF

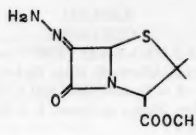
William H. W. Lunn, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 15, 1972, Ser. No. 306,958

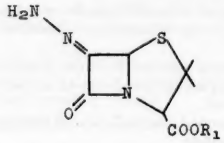
Int. Cl. A61k *21/00;* **C07d** *99/14*

U.S. Cl. 260—239.1 **8 Claims**

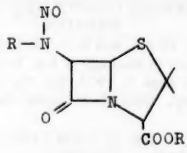
1. A compound of the formula



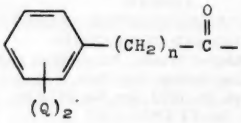
2. A process for preparing a 6-hydrazonopenicillin having the formula



which comprises reacting an N-nitroso penicillin ester of the formula

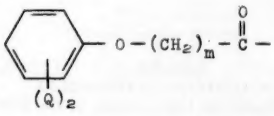


with at least an equimolar amount of triphenylphosphine at a temperature of from about 0° C. to about 50° C., in which, in the above formulae, R is a group of the formula



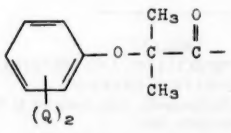
(Ia)

in which n is 0 or an integer from 1 to 5 and each Q independently is hydrogen; C_1-C_3 alkyl, C_1-C_3 alkoxy, nitro, halogen, or trifluoromethyl; a group of the formula



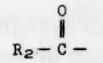
(Ib)

in which m is an integer from 1 to 5 and q is as defined above; a group of the formula



(Ic)

in which Q is as defined above; or a group of the formula



(Id)

in which R_2 is hydrogen or C_1-C_8 alkyl; and R_1 is C_1-C_4 alkyl, 2,2,2-trihaloethyl, 2-iodoethyl, benzyl, p-nitrobenzyl, succinimidomethyl, phthalimidomethyl, p-methoxybenzyl, benzhydryl, C_2-C_6 alkanoyloxymethyl, phenacyl, p-chlorophenacyl, or p-bromophenacyl.

3,880,838

AMINO ACID DERIVATIVES

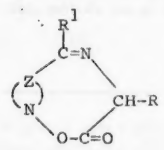
Miklos Bodanszky, Shaker Heights, Ohio, assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

Division of Ser. No. 98,939, Dec. 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 798,790, Feb. 12, 1969, abandoned, which is a continuation-in-part of Ser. No. 451,609, April 28, 1965, abandoned. This application Apr. 9, 1973, Ser. No. 349,502

Int. Cl. C07d *87/54*

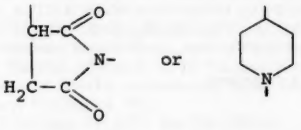
U.S. Cl. 260—239.3 B **8 Claims**

1. A compound of the formula



wherein R is the residue of an α-amino acid, R^1 is hydrogen or a straight or branched chain alkyl radical of from 1 to 4 carbon atoms, and

is



3,880,839

PROCESS FOR THE PREPARATION OF RIFAMYCIN 5 AND ANALOGS THEREOF FROM THE HALOMICINS

Ashit K. Ganguly, Upper Montclair; Sol Szmulewicz, Hazlet, and Olga Z. Sarre, Verona, all of N.J., assignors to Schering Corporation, Bloomfield, N.J.

Filed Dec. 21, 1973, Ser. No. 427,195

Int. Cl. C07d *99/02, 99/04*

U.S. Cl. 260—239.3 P **5 Claims**

1. A process which comprises oxidizing halomicin A, halomicin B or halomicin D under acidic conditions to yield rifamycin S.

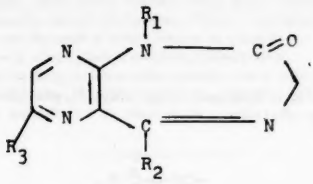
3,880,840

PYRAZINO-1,4-DIAZEPINES

George Francis Field, West Caldwell; Leo Henryk Sternbach, Upper Montclair, and Armin Walser, West Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Feb. 1, 1974, Ser. No. 438,810
Int. Cl. C07d 57/24
U.S. Cl. 260—239.3 B 4 Claims

1. a compound of the formula



wherein R_1 is selected from the group consisting of hydrogen, lower alkyl, hydroxy-lower alkyl, lower alkoxy-lower alkyl, cycloalkyl-lower alkyl wherein the cycloalkyl ring has from 3 to 7 carbon atoms or dilower alkylamino-lower alkyl; R_2 signifies phenyl, halophenyl or pyridyl; R_3 signifies hydrogen or halogen and the pharmaceutically acceptable acid addition salts thereof.

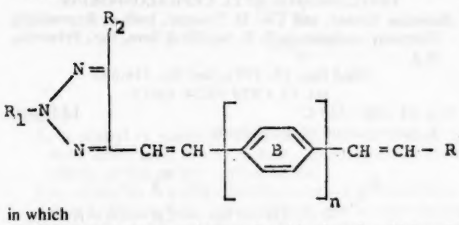
3,880,841

TRIAZOLYL ETHENYL PHENYLENE DERIVATIVES

Fritz Fleck, Bottmingen/Basel-Land; Hans Kittl; Hans-Rudolf Schmid, both of Riehen/Basel; Horst Schmid, Munchenstein/Basel-Land, and Salvatore Valenti, Bottmingen/Basel-Land, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

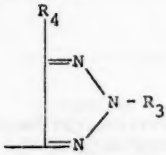
Filed Mar. 13, 1972, Ser. No. 234,325
Claims priority, application Switzerland, Mar. 18, 1971, 4036/71
Int. Cl. C07d 55/02; C09b 23/14
U.S. Cl. 260—240 CA 15 Claims

1. A compound of the formula



in which

R is substituted or unsubstituted and is phenyl or biphenyl, or a radical of formula II,



II

R_1 and R_3, which may be the same or different, are substituted or unsubstituted and are alkyl of 1 to 6 carbon atoms, phenyl or biphenyl,

R_2 and R_4, which may be the same or different, are hydrogen, chlorine, substituted or unsubstituted alkyl of 1 to 6 carbon atoms, —CN, —$CONH_2$, —$COOR_5$ in which R_5 is hydrogen or unsubstituted or substituted alkyl of 1 to 6 carbon atoms, or —NH—CO—R_6 in which R_6 is substituted or unsubstituted alkyl of 1 to 6 carbon atoms,

n is 1 to 6,

and the ring(s) B may be unsubstituted or substituted,

any substituent on a ring B or on a substituted phenyl or biphenyl is alkyl or alkoxy of 1 to 6 carbon atoms; phenyl sulphonyl; methylphenylsulphonyl; chlorophenylsulphonyl; phenyl or phenoxy, either of which may be substituted by halogen or alkyl or alkoxy of 1 to 6 carbon atoms; halo; cyano; carboxyl; sulphonic acid; alkyl sulphonyl of 1 to 6 carbon atoms; carboxylic acid amide or ester; or sulphonic acid amide or ester and any substituent on a substituted alkyl is alkoxy of 1 to 6 carbon atoms, amino or halo,

provided that *n* is other than 1, when R signifies a radical of formula II stated above.

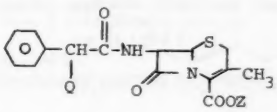
3,880,842

CEPHALOSPORIN DERIVATIVES

Bong Kuk Lee, Old Bridge, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 30, 1972, Ser. No. 258,015
Int. Cl. C07d 99/24
U.S. Cl. 260—240 G 5 Claims

1. A compound of the formula:



wherein Q is —N=CH—R or —NH—CH_2R and R is naphthyl or orthosubstituted naphthyl wherein said substituent is halogen, hydroxy, carboxyl, amido, lower alkoxy, or lower alkyl; and Z is hydrogen, lower alkyl, alkali metal, alkaline earth metal, dibenzylamine, or N,N-dibenzylethylenediamine; and acid-addition salts thereof.

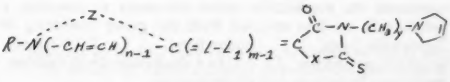
3,880,843

MEROCYANINE DYES

Arthur Fumia, Jr., Hilton, and Donald W. Heseltine, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 83,621, Oct. 23, 1970, Pat. No. 3,718,476.
This application Nov. 13, 1972, Ser. No. 305,767
Int. Cl. C07d 91/44
U.S. Cl. 260—240.1 7 Claims

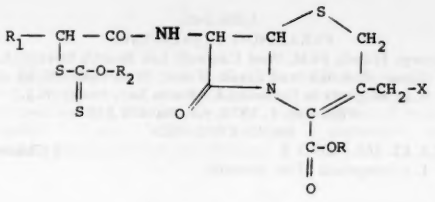
1. A merocarbocyanine dye of the formula



wherein R represents an alkyl sulfoalkyl, hydroxyalkyl, or carboxyalkyl of 1 to 18 carbon atoms or a phenyl, sulfophenyl, carboxyphenyl, or tolyl group;

Z represents the nonmetallic atoms required to complete a heterocyclic nucleus selected from the group consisting of a thiazole nucleus, a benzothiazole nucleus, a naphthothiazole nucleus, an oxazole nucleus, a benzoxazole nucleus, a naphthoxazole nucleus, a selenazole nucleus, a benzoselenazole nucleus, a naphthoselenazole nucleus, a thiazoline nucleus, a 2-pyridine nucleus, a 4-pyridine nucleus, a 2-quinoline nucleus, a 4-quinoline nucleus, a 1-isoquinoline nucleus, a 3,3-dialkyl-indolenine nucleus, an imidazole nucleus, a benzimidazole nucleus, and a naphthimidazole nucleus;

L and L_1 represent methine groups;
n and *m* represent integers from 1 to 3;
X represents sulfur, oxygen, selenium or NR_1, where R_1 is hydrogen or a group as defined for R; and
y is an integer from 2 to 5.



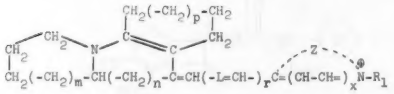
3,880,844

PHOTOGRAPHIC SENSITIZING DYES CONTAINING A BRIDGEHEAD NITROGEN

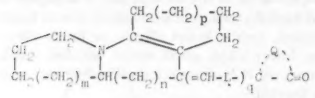
Arthur Fumia, Jr., Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 234,389, March 13, 1972, Pat. No. 3,772,034. This application Mar. 20, 1973, Ser. No. 343,062
Int. Cl. C09b *23/10*
U.S. Cl. 260—240.4 **7 Claims**

1. A cyanine or merocyanine dye selected from those having the formulas



and



wherein *m*, *n*, *p* and *x* each has a value of 0 or 1; *r* and *q* each are 0, 1, 2 or 3; L represents a methine group; Z represents the nonmetallic atoms necessary to complete a heterocyclic nucleus selected from the group consisting of benzothiazole, naphthothiazole, thionaphtheno-7′, 6′, 4,5-thiazole, oxazole, benzoxazole, naphthoxazole, selenazole, naphthoselenazole, thiazoline, 2-quinoline, 4-quinoline, 1-isoquinoline, 3,3-dialkylindolenine, 2-pyridine, 4-pyridine, imidazole, benzimidazole, naphthimidazole and lepidine; R_1 represents lower alkyl, carboxyalkyl, sulfoalkyl, hydroxyalkyl, alkoxyalkyl, sulfoalkoxyalkyl and phenyl; A represents an anion and Q represents the nonmetallic atoms necessary to complete a heterocyclic nucleus selected from the group consisting of 2-pyrazolin-5-one, indandione, 2,4,6-triketohexahydropyrimidine, 2,6-diketo-4-thiohexahydropyrimidine, rhodanine, hydantoin and thiohydantoin.

3,880,845

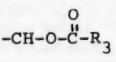
THIOCARBONYLTHIOACETYL CEPHALOSPORINS

Uwe D. Treuner, Regensburg, Germany, assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed Mar. 11, 1971, Ser. No. 123,408
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C **11 Claims**

1. A compound of the formula

wherein R is hydrogen, lower alkyl, R_4-phenyllower alkyl, tri(lower alkyl)silyl,



or a salt forming ion of the group consisting of aluminum, alkali metal, alkaline earth metal, dibenzylamine, N,N-dibenzylethylenediamine, methylamine, triethylamine, procaine and N-ethylpiperidine, R_1 is hydrogen, lower alkyl, R_4-phenyl-lower alkyl, R_4-phenyl, or a monocyclic heterocyclic selected from the group consisting of thienyl, furyl, oxazolyl, isoxazolyl and thiazolyl, and halo, lower alkyl, lower alkoxy or phenyl substituted members of said heterocyclics, R_2 is a salt forming metal of the group consisting of aluminum, alkali metal or alkaline earth metal, lower alkyl, R_4-phenyl, R_4-phenyl-lower alkyl, R_3 is lower alkyl, R_4-phenyl, R_4-phenyl-lower alkyl, and X is hydrogen, hydroxy, lower alkanoyloxy, R_4—phenyl—CO—O, R_4-phenyl-lower alkanoyloxy, lower alkylamine, dibenzylamine, N,N′-dibenzylpyridinium, pyridinium, 1-quinolinium, 1-picolinium or together X and R represent a bond linking carbon and oxygen in a lactone ring, and R_4 is hydrogen, halogen, lower alkyl, lower alkoxy, hydroxy or carboxy.

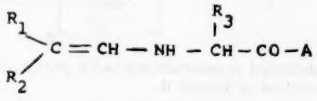
3,880,846

VINYLAMINOACETYL CEPHALOSPORINS

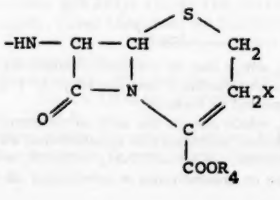
Hermann Breuer, and Uwe D. Treuner, both of Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 19, 1972, Ser. No. 316,623
Int. Cl. C07d *99/24, 99/16*
U.S. Cl. 260—243 C **13 Claims**

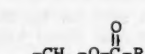
1. A compound of the formula



wherein A is



R_1 is —CN or —COR_5;
R_2 is —CN, —COR_5, —SO_2R_6 or —$PO(R_7)_2$;
R_3 is hydrogen, lower alkyl, phenyl, hydroxyphenyl, thienyl, furyl or pyridyl;
R_4 is hydrogen, lower alkyl, phenyl-lower alkyl,



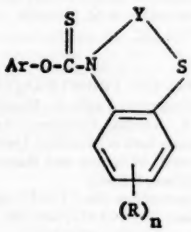
aluminum, alkali metal, alkaline earth metal, phenyl-lower alkylamine, lower alkylamine, N-lower alkylpiperidine;
R_5, R_6 and R_7 each is lower alkoxy or phenyl;
R_8 is lower alkyl, phenyl or phenyl-lower alkyl
and X is hydrogen, lower alkanoyloxy, lower alkoxy, lower alkylmercapto, lower alkylamino, phenyl-lower alkylamine, quinolinium or picolinium.

3,880,847
THIOCARBAMIC ACID DERIVATIVES

Horst Böshagen, Haan/Rhld, and Manfred Plempel, Wuppertal-Elberfeld, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 25,557, April 3, 1970, Pat. No. 3,729,473. This application Sept. 27, 1972, Ser. No. 292,484
Claims priority, application Germany, Apr. 15, 1969, 1917739
Int. Cl. C07d *93/12*
U.S. Cl. 260—243 R **12 Claims**

1. A compound of the formula:



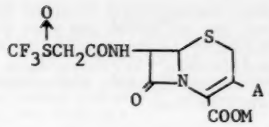
wherein
Ar is phenyl or naphthyl, unsubstituted or substituted by halo, lower alkyl of one to four carbon atoms or lower alkoxy of one to four carbon atoms;
Y is —CH_2CH_2—, —$CH_2CH(CH_3)$— or —$CH(CH_3)CH_2$—,
R is hydrogen, halo, lower alkyl of one to four carbon atoms, lower alkoxy of one to four carbon atoms, lower alkylmercapto of one to four carbon atoms or trifluoromethyl; and
n is 1, 2 or 3.

3,880,848
7-TRIFLUOROME THYLSULFINYLACETAMIDO CEPHALOSPORINS

Robert M. De Marinis, King of Prussia, and John R. E. Hoover, Glenside, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed June 18, 1973, Ser. No. 371,081
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C **5 Claims**

1. A compound of the formula:



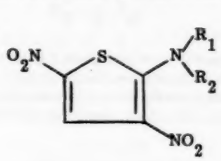
in which:
M is hydrogen or an alkali metal or ammonium cation;
A is CH_2SHet; and
Het is a five or six membered heterocyclic group containing carbon and one to four atoms selected from the group consisting of N, O and S, each such group being unsubstituted or substituted with from one to two groups selected from lower alkyl, alkoxyalkyl, and trifluoromethyl, each alkyl or alkoxy having from one to four carbon atoms, or an N-oxide thereof.

3,880,849
THIOPHENES

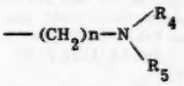
Andre Szente, and Joseph Hellerbach, both of Basel, Switzerland, assignors to Hoffman-La Roche Inc., Nutley, N.J.

Filed Aug. 22, 1973, Ser. No. 390,627
Claims priority, application Switzerland, Aug. 31, 1972, 12839/72; Mar. 2, 1973, 3098/73
Int. Cl. C07d *63/12*
U.S. Cl. 260—244 R **43 Claims**

1. A compound represented by the formula



wherein R_1 represents lower alkyl, lower alkenyl, lower alkynyl, halo lower alkyl, hydroxy lower alkyl, lower alkoxy lower alkyl, lower alkylthio lower alkyl, lower alkylcarbonyl, halo lower alkylcarbonyl, lower alkanoyloxy lower alkyl, benzoyloxy lower alkyl, naphthoyloxy lower alkyl, lower alkyl benzoyloxy lower alkyl, lower alkyl naphthoyloxy lower alkyl pyridylcarbonyloxy lower alkyl, lower alkylaminocarbonyloxy lower alkyl,



wherein R_4 and R_5 each represent hydrogen or lower alkyl or R_4 and R_5 taken together with the nitrogen atom are aziridinyl, pyrrolidinyl, piperidinyl, azepinyl, thiazolidine, isoxazolidine, pyrazolidine, imidazolidine, oxazolidine, piperazinyl, morpholinyl, thiamorpholinyl, diazepinyl, thiazepinyl, oxazepinyl, lower alkyl or hydroxy lower alkyl substituted thiazolidine, isoxazolidine, pyrazolidine, imidazolidine, oxazolidine, piperazinyl, morpholinyl, thiamorpholinyl, diazepinyl, thiazepinyl, or oxazepinyl,
and *n* is 1, 2, 3 or 4, R_2 represents hydrogen, lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy lower alkyl or hydroxy lower alkyl or R_1 and R_2 taken together with the nitrogen atom is aziridinyl, pyrrolidinyl, azepinyl, thiazolidine, isoxazolidine, pyrazolidine, imidazolidine, oxazolidine, piperazinyl, morpholinyl, thiamorpholinyl, diazepinyl, thiazepinyl, oxazepinyl, lower alkyl or hydroxy lower alkyl substituted thiazolidine, isoxazolidine, pyrazolidine, imidazolidine, oxazolidine, piperazinyl,

morpholinyl, thiamorpholinyl, diazepinyl, thiazepinyl or oxazepinyl, with the proviso that when R_1 represents lower alkyl and R_2 represents hydrogen, the R_1 represents lower alkyl containing 2 to 7 carbon atoms,

and a pharmaceutically acceptable acid addition salt of the compounds which are basic.

3,880,850

PYRIMIDO(4,5-D)PYRIDAZINE DERIVATIVES AND PROCESS FOR PRODUCING THEM

Shojiro Yurugi, Kyoto, and Shintaro Kikuchi, Hyogo, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

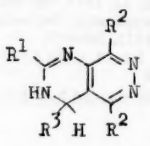
Filed Dec. 6, 1972, Ser. No. 312,504

Claims priority, application Japan, Dec. 6, 1971, 46-98876

Int. Cl. C07d *87/40*

U.S. Cl. 260—246 B **27 Claims**

1. A compound of the formula



wherein R^1 is phenyl or methylphenyl; R^2 is morpholino, methylmorpholino, or piperidino, and R^3 is alkyl of 1 to 7 carbon atoms, allyl, benzyl, methylbenzyl, methoxybenzyl, 3-4 methylenedioxy-benzyl, phenethyl, phenyl or cyclohexyl.

3,880,851

ANTIBIOTIC METHOD

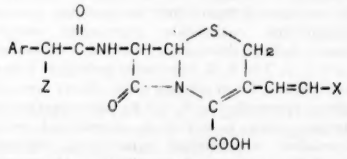
John Alan Webber, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. Nos. 211,783, Dec. 24, 1971, abandoned, and Ser. No. 153,065, June 14, 1971. This application Feb. 19, 1974, Ser. No. 443,548

Int. Cl. A61k *27/00*

U.S. Cl. 424—246 **5 Claims**

1. A method for treating Serratia, Pseudomonas, indole-positive Proteus and Enterobacter infections in warmblooded animals comprising administering to said infected animals between 50 mg/kg and 500 mg/kg of the body weight of a 3-substituted vinyl cephalosporin compound of the formula



where Ar is phenyl, 2-thienyl or 3-thienyl, Z is —COOH, and X is —COO(C_1 to C_2-alkyl) or —COOH, or a pharmaceutically acceptable salt of said cephalosporin compound.

3,880,852

PYRIMIDINE SULPHAMATES

Ann Mary Cole, Maidenhead; John Angus William Turner, Wokingham, and Brian Kenneth Snell, Twyford, all of England, assignors to Imperial Chemical Industries Limited, London, England

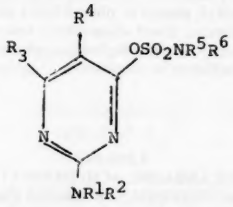
Filed Aug. 29, 1972, Ser. No. 284,546

Claims priority, application United Kingdom, Sept. 23, 1971, 44401/71

Int. Cl. C07d *87/46, 51/42*

U.S. Cl. 260—247.1 M **17 Claims**

1. A pyrimidine sulphamate derivative having the formula:



or a salt thereof, wherein R^1 and R^2 are hydrogen or lower alkyl, lower alkynyl or lower alkenyl but are not both hydrogen, or together with the adjacent N-atom form a monocyclic 5-, 6- or 7-ring atom heterocyclic group, optionally interrupted by an additional hetero atom selected from the group consisting of O, N and S; R^3 and R^4 are lower alkyl, lower alkynyl or lower alkenyl; and R^5 and R^6 are lower alkyl, lower alkynyl or lower alkenyl or together with the adjacent N-atom form a monocyclic 5-, 6- or 7-ring atom heterocyclic group, optionally interrupted by an additional hetero atom selected from the group consisting of O, N and S.

3,880,853

PYRANO-AND THIOPYRANOINDOLE

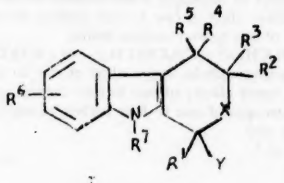
Christopher A. Demerson; Leslie G. Humber, both of Montreal; Andre A. Asselin, Lemoyne; Ivo Jirkovsky, and Thomas A. Dobson, both of Montreal, Quebec, all of Canada, assignors to Ayerst, McKenna and Harrison Limited, Ville St. Laurent, Quebec, Canada

Continuation-in-part of Ser. No. 217,627, Jan. 13, 1972. This application July 9, 1973, Ser. No. 377,837

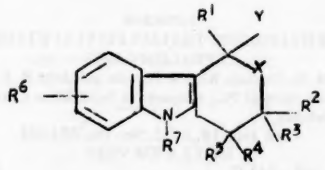
Int. Cl. C07d *27/56*

U.S. Cl. 260—247.5 FP **46 Claims**

1. A compound selected from those of the formulae I and Ia



I



Ia

in which R^1 is lower alkyl or lower cycloalkyl; R^2, R^3, R^4 and R^5 are the same or different selected from the group consisting of hydrogenn and lower alkyl; R^6 is hydrogen, lower alkyl, hydroxy, lower alkoxy, lower alkanoyloxy, nitro or halo; R^7 is hydrogen, lower alkyl, lower alkenyl, propargyl, phenyl(lower)alkyl or an amino(lower) alkyl radical of formula —Alk—NR^8R^9 wherein Alk is an alkylene selected from the group consisting of $CR^{10}R^{11}CR^{12}R^{13}$, $CR^{10}R^{11}CR^{12}R^{13}CR^{14}R^{15}$ and $CR^{10}R^{11}CR^{12}R^{13}CR^{14}R^{15}CR^{16}R^{17}$ wherein R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, R^{16} and R^{17} are hydrogen or lower alkyl and R^8 and R^9 are either the same or different selected from the group consisting of hydrogen and lower alkyl, or R^8 is hydrogen and R^9 is p-chlorophenacyl or R^8 and R^9 together with the nitrogen atom to which they are joined form a heterocyclic amine radical selected from the group consisting of 1-pyrrolidinyl, piperdino, morpholino, piperazino, 4-(lower alkyl)-1-piperazinyl and 4-[hydroxy(lower)alkyl]-1-piperazinyl; X is oxy and Y is lower alkyl, phenyl(lower)alkyl or an amino(lower)alkyl radical of formula —Alk—NR^8R^9 wherein Alk is an alkylene selected from the group consisting of $CR^{10}R^{11}$, $CR^{10}R^{11}CR^{12}R^{13}$, $CR^{10}R^{11}CR^{12}R^{13}CR^{14}R^{15}$ and $CR^{10}R^{11}CR^{12}R^{13}CR^{14}R^{15}CR^{16}R^{17}$ wherein R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, R^{16} and R^{17} are hydrogen or lower alkyl and R^8 and R^9 are as defined herein; with the proviso that at least one of R^7 and Y is —Alk-NR^8R^9 and that in the compounds of formula *Ia*, Y is —Alk NR^8R^9 as defined herein; and the corresponding acid addition salt with a pharmaceutically acceptable acid.

3,880,854

SELECTIVE DEHALOGENATION

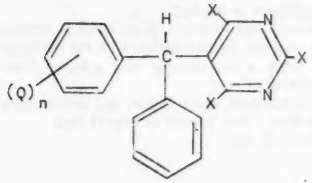
Jack B. Campbell, 1809 S. Chester, Indianapolis, Ind. 46203

Continuation-in-part of Ser. No. 286,507, Sept. 5, 1972, abandoned. This application May 10, 1974, Ser. No. 468,943

Int. Cl.[2] C07D *51/18, 51/28*

U.S. Cl. 260—251 R **4 Claims**

1. The process of selectively dehalogenating the pyrimidyl ring of a compound of the formula



wherein

at least one of X is chlorine or bromine, the remainder hydrogen or lower alkyl;

Q is chlorine or fluorine; and

n is an integer from 1 to 5,

by contacting the compound with hydrogen in the presence of Raney nickel catalyst,

in methanol as the solvent,

in the presence of a hydrogen halide acceptor selected from the group consisting of tri(C_1–C_4 alkyl)amines and pyridine, at a temperature within the range of from about ambient room temperature to about 60°C., at a hydrogen pressure of from about 14 pounds per square inch to about 60 pounds per square inch.

3,880,855

5,6-DIHYDRO-11-H-PYRIMIDO[4,5-B][1,4]BENZODIAZEPINES

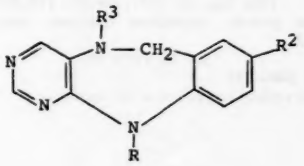
Peter Frederick Juby, Jamesville, and Thomas William Hudyma, Manlius, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 351,217, April 16, 1973. This application Feb. 25, 1974, Ser. No. 445,382

Int. Cl. C07d *57/02*

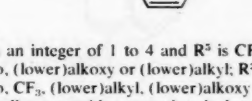
U.S. Cl. 260—256.4 F **14 Claims**

1. The compound having the formula



Ib

in which R and R^3 are alike or different and are H, (lower)alkyl or a radical of the formula



in which *n* is an integer of 1 to 4 and R^5 is CF_3, chloro, H, fluoro, bromo, (lower)alkoxy or (lower)alkyl; R^2 is H, chloro, bromo, fluoro, CF_3, (lower)alkyl, (lower)alkoxy or nitro; or a pharmaceutically acceptable, nontoxic salt thereof.

3,880,856

ERGOLINE DIMERS

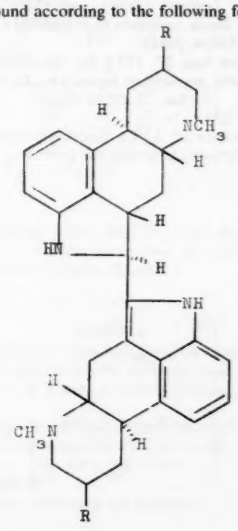
Nicholas J. Bach, and Edmund C. Kornfeld, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed June 29, 1973, Ser. No. 375,212

Int. Cl. C07d *43/20*

U.S. Cl. 260—285.5 **7 Claims**

1. A compound according to the following formula



wherein R is carbomethoxy, carboethoxy, carbo-n-propoxy, carboisopropoxy, methyl, ethyl, n-propyl, isopropyl, hydroxymethyl, chloromethyl, or cyanomethyl, and the $\Delta^{7(8)}$, $\Delta^{8(9)}$, and $\Delta^{9(10)}$ derivatives thereof.

3,880,857

4-ALKOXY-N-AMINONAPHTHALIC ACID IMIDES AS OPTICAL BRIGHTNERS

Horst Scheuermann, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany

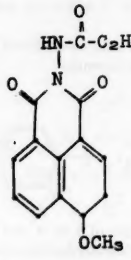
Filed Aug. 26, 1971, Ser. No. 175,327

Claims priority, application Germany, Sept. 3, 1970, 2043662

Int. Cl. C07d *39/00*

U.S. Cl. 260—281 **1 Claim**

1. The optical brightener of the formula



3,880,858

3-(5,7-DIMETHYL-2-HYDROXY-4-OXO-6,8-DECADIENYL)-GLUTARIMIDE

Nakao Ishida; Tsutomu Okada, and Akira Kamata, all of Yokohama, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

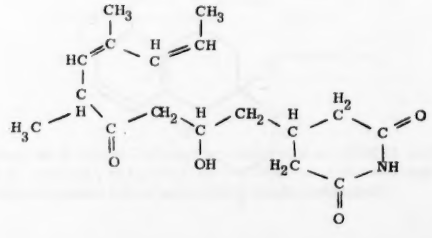
Filed Aug. 27, 1973, Ser. No. 391,996

Claims priority, application Japan, Aug. 25, 1972, 47-85074

Int. Cl. C07d *29/20*

U.S. Cl. 260—281 **1 Claim**

1. The d-isomer of 3-(5,7-dimethyl-2-hydroxy-4-oxo-6,8-decadienyl)-glutarimide having the formula



3,880,859

N-SUBSTITUTED-4-ALKOXYNAPHTHALIMIDES

Horst Scheuermann, Ludwigshafen, and Peter-Matthias Heil, Frankenthal, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

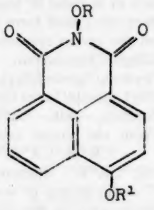
Filed May 30, 1972, Ser. No. 258,060

Claims priority, application Germany, June 3, 1971, 2127522; Sept. 24, 1971, 2147706

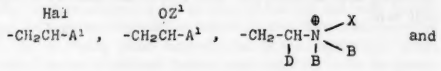
Int. Cl. C07d *39/00*

U.S. Cl. 260—281 **4 Claims**

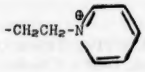
1. A compound of the formula



wherein R is a radical selected from the class consisting of



and



in which:

A^1 is hydrogen or methyl;

Hal is chlorine or bromine;

Z^1 is alkyl of 1 to 4 carbon atoms, benzoyl, alkanoyl of 2 to 8 carbon atoms, the radical R^2—NH—CO— where R^2 is methyl, ethyl, n-propyl, isopropyl, phenyl, chlorophenyl, dichlorophenyl or methylphenyl, or the radical R^3—O—CO— where R^3 is alkyl of 1 to 8 carbon atoms, alkoxyalkyl of 3 to 6 carbon atoms, cyclohexyl, benzyl, phenyl, chlorophenyl, methylphenyl or methoxyphenyl;

D is hydrogen or methyl;

B is alkyl of 1 to 4 carbon atoms taken as separate substituents or when taken together with the nitrogen atom may also form a heterocyclic ring selected from the class consisting of

pyrroliddinium, piperidinium and imidazolinium, and

X is methyl, ethyl, phenyl or benzyl; and

R^1 is methyl or ethyl.

3,880,860

N-CYCLOALKYL AND N-CYCLOALKANEALKYLTHIOAMIDES

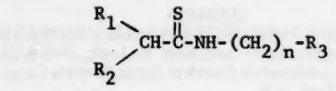
Bernard Loev, 321 Robinson Dr., Broomall, Pa.

Division of Ser. No. 226,531, Feb. 15, 1972, Pat. No. 3,749,728. This application Apr. 19, 1973, Ser. No. 352,849

Int. Cl. C07d *33/60*

U.S. Cl. 260—283 S **4 Claims**

1. A compound of the formula:



in which:

R_1 is a 2-quinolyl ring;

R_2 is hydrogen, lower alkyl, lower alkenyl or phenyl ;

R_3 is cycloalkyl having 3 to b 6 carbon atoms and *n* is 0 or 1 or a pharmaceutically acceptable acid addition salt thereof.

3,880,861

SUBSTITUTED-O-HYDROXY-ω-(METHYLSULFINYL)ACETOPHENONES AND PROCESS FOR PRODUCING SAME

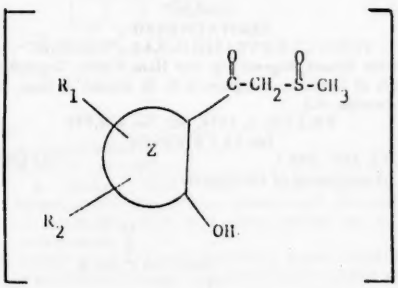
Maximilian von Strandtmann, Rockaway; John Shavel, Jr., Mendham; Sylvester Klutchko, Hackettstown, and Marvin Cohen, New Milford, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

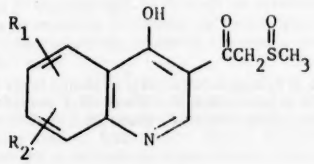
Division of Ser. No. 174,947, Aug. 25, 1971, Pat. No. 3,801,644. This application Jan. 17, 1974, Ser. No. 434,161

Int. Cl.[2] C07D *33/60*

U.S. Cl. 260—283 S **4 Claims**

1. A compound of the formula:





wherein R_1 is hydrogen, halogen or alkoxy having 1 to 6 carbon atoms in the alkyl residue, and R_2 is hydrogen or alkoxy having 1 to 6 carbon atoms in the alkyl residue and R_1 and R_2 taken together form a methylenedioxy group.

3,880,862

6β-AZIDO-17-CYCLOALKYLMETHYL-4,5α-EPOXYMORPHINAN-3-OLS

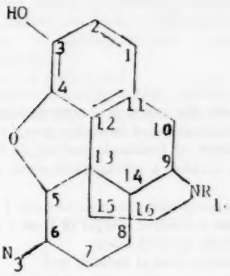
Robert I. Meltzer, Rockaway, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 31, 1973, Ser. No. 393,377

Int. Cl.[2] C07D *43/28*

U.S. Cl. 260—285 **2 Claims**

1. A compound of the formula:



wherein R_1 is cycloalkylmethyl having 4 to 7 carbon atoms and the pharmaceutically acceptable acid addition salts.

3,880,863

17-ARALKYL-6 BETA-AZIDO-4,5 ALPHA-EPOX-YMORPHINAN-3-OLS

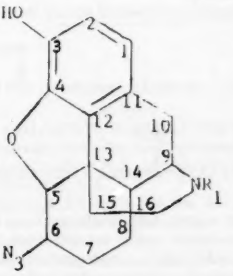
Robert I. Meltzer, Rockaway, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 31, 1973, Ser. No. 393,378

Int. Cl.[2] C07D *43/28*

U.S. Cl. 260—285 **2 Claims**

1. A compound of the formula:



wherein R_1 is phenyl lower alkyl in which the lower alkyl portion has 1 to 7 carbon atoms and the pharmaceutically acceptable acid addition salts thereof.

3,880,864

CERTAIN FORMYLALKYL QUATERNARY SALTS

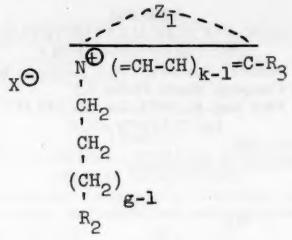
Lewis L. Lincoln, and Donald W. Heseltine, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 819,946, April 28, 1969, Pat. No. 3,759,901. This application Oct. 20, 1972, Ser. No. 300,559

Int. Cl. C07d *91/44*

U.S. Cl. 260—286 Q **10 Claims**

1. A quaternary salt having the formula:



wherein:

a. Z_1 represents the atoms necessary to complete a heterocyclic nucleus selected from the group consisting of an indole nucleus, an imidazole nucleus, an oxazole nucleus, a thiazole nucleus, a selenazole nucleus and a quinoline nucleus,

b. k represents a positive integer of from 1 to 2,

c. g represents a positive integer of from 1 to 5,

d. X^- represents an acid anion,

e. R_2 represents a formyl radical, and

f. R_3 represents a member selected from the group consisting of a hydrogen atom, a C_1–C_6 alkyl radical, a C_1–C_6 alkylthio radical phenyl and naphthyl.

3,880,865

POLYFUNCTIONAL QUATERNARY AMIDOXIMIDINUM SALTS

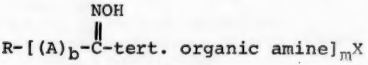
David S. Breslow, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 250,504, May 5, 1972. This application Jan. 29, 1974, Ser. No. 437,572

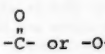
Int. Cl. C07d *33/34, 35/26, 37/14*

U.S. Cl. 260—286 Q **3 Claims**

1. A polyfunctional compound having the formula



wherein R is an organic radical selected from the group consisting of hydrocarbon, halide substituted hydrocarbon, hydrocarbonoxy-hydrocarbon, hydrocarbon-thio-hydrocarbon and hydrocarbonsulfonyl-hydrocarbon radicals, A is



b is zero or 1, tert. organic amine is selected from the group consisting of benzopyridines and substituted benzopyridines having a dissociation constant greater than 1×10^{-12} as determined at 25°C., Z is chloride, bromide or iodide, *n* and *m* are 1 to 3, *c* and *d* are zero or 1, with *c* being 1 when *d* is zero, and with *d* being 1 when *c* is zero, and X is the anion of an acid having a dissociation constant greater than 1.0×10^{-3} as determined at 25°C., the number of X's being equal to the number of tert. organic amines when X is monovalent and being equal to one-half the number of tert. organic amines when X is divalent.

3,880,866

7-AZAINDOLE FUSED HETEROCYCLIC COMPOUNDS

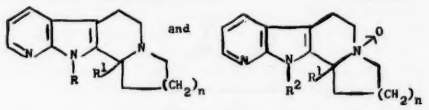
David R. Herbst, Wayne, and Kurt W. Ledig, Philadelphia, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 248,999, May 1, 1972, abandoned. This application Apr. 18, 1973, Ser. No. 352,375

Int. Cl. C07d *57/04*

U.S. Cl. 260—293.53 **34 Claims**

1. A compound of the formulae:



wherein R is hydrogen, alkyl of from 1 to 5 carbon atoms, or allyl; R^1 is methyl, ethyl, or n-propyl; R^2 is alkyl of from 1 to 5 carbon atoms or allyl; and *n* is 1 or 2; and the pharmacologically acceptable acid addition salts thereof.

3,880,867

DERIVATIVES OF FURO(2,3-D)PYRAZOLO(3,4-B)PYRIDINES

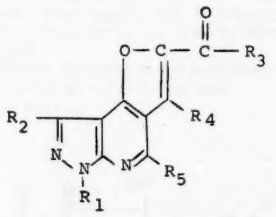
Theodor Denzel, Regensburg, and Hans Hoehn, Tegernheim, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Feb. 5, 1974, Ser. No. 439,777

Int. Cl. C07d *99/04*

U.S. Cl. 260—295 T **13 Claims**

1. A compound of the formula



wherein R_1 is hydrogen, lower alkyl or phenyl-lower alkyl; R_2 is hydrogen or lower alkyl; R_3 is lower alkyl, phenyl, hydroxy or lower alkoxy; R_4 is hydroxy, lower alkoxy or

wherein R_6 and R_7 each is hydrogen, lower alkyl or phenyl-lower alkyl; and R_5 is hydrogen, lower alkyl or phenyl.

3,880,868

2-(SUBSTITUTED AMINO) QUINOLIZINIUM BROMIDES

Robert J. Alaimo, and Marvin M. Goldenberg, both of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Aug. 7, 1972, Ser. No. 278,618
Int. Cl. C07d *31/42*
U.S. Cl. 260—296 B 1 Claim

1. The compound 2-(m-trifluoromethylanilino)quinolizinium bromide.

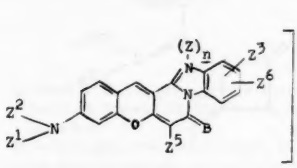
3,880,869

DYES OF THE BENZOPYRANE SERIES

Horst Scheuermann, Ludwigshafen; Wolfgang Mach, Hockenheim, and Dietmar Augart, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Nov. 1, 1973, Ser. No. 411,759
Claims priority, application Germany, Nov. 2, 1972, 2253538; June 2, 1973, 2328146
Int. Cl. C07d *7/24*
U.S. Cl. 260—296 P 9 Claims

1. A dye of the formula



where

B is oxygen, imino or $N-X)_mZ^4$,

X is —CO— or $-SO_2-$,

Z is methyl, ethyl, benzyl, β-hydroxyethyl, β-hydroxypropyl, β-hydroxy-γ-chloropropyl, β-cyanoethyl or β-carbalkoxyethyl, said alkoxy having one to four carbon atoms,

Z^1 is alkyl of one to four carbon atoms, hydroxyalkyl of two to three carbon atoms, cyanoethyl, methoxyethyl, ethoxyethyl, methoxypropyl, acetoxyethyl, acetoxypropyl, carbalkoxyethyl, said alkoxy having one to four carbon atoms, benzyl or phenylethyl,

Z^2 is hydrogen, alkyl of one to four carbon atoms or hydroxyethyl,

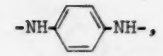
Z^1 and Z^2 together with the nitrogen are pyrrolidine, piperidine, morpholine, piperazine or N-methylpiperazine,

Z^3 is hydrogen, methyl, methoxy, chlorine, cyano or nitro,

m is 1 or 2,

n is 0 or 1,

Z^4 (when $m = 1$) is alkyl of one to four carbon atoms, chloromethyl, bromomethyl, alkoxymethyl, said alkoxy having one to four carbon atoms, β-chloroethyl, β-bromoethyl, cyclohexyl, β-phenylvinyl, alkoxy of one to four carbon atoms, β-methoxyethoxy, β-ethoxyethoxy, phenyl, phenyl substituted by chloro, nitro, methyl or methoxy, alkylamino of one to four carbon atoms, cyclohexylamino, benzylamino, phenylamino or phenylamino substituted by chloro, trifluoromethyl, methyl or methoxy, and (when $m = 2$) is methylene, ethylene, phenylene, $-O-C_2H_4O-$, $-O-C_2H_4OC_2H_4-O-$ or



Z^5 is hydrogen, carbalkoxy having a total of two to five carbon atoms, carbo-β-methoxyethoxy, carbo-β-ethoxyethoxy, cyano, phenyl, phenylsulfonyl, carbamoyl, carbamoyl substituted at the nitrogen once or twice by alkyl of one to four carbon atoms, hydroxyalkyl of two to three carbon atoms, cyanoethyl, cyclohexyl, benzyl or phenyl, carbo-pyrrolidide, carbopiperidide, carbomorpholide, carbo-piperazide or carbo-N-methylpiperazide,

Z^6 is hydrogen or methyl and

A^- is a chloride, bromide, nitrate, sulfate, methosulfate, ethosulfate, phosphate, thiocyanate, formate, acetate, tolylsulfonyl or tetrachlorozincate anion

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3,880,870

7-AZAINDOLE FUSED HETEROCYCLIC COMPOUNDS

Kurt W. Ledig, Philadelphia, and David R. Herbst, Wayne, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 352,375, April 18, 1973, which is a continuation-in-part of Ser. No. 248,999, May 1, 1972, abandoned. This application Apr. 25, 1974, Ser. No. 464,077
Int. Cl. C07d *57/04*
U.S. Cl. 260—296 P 8 Claims

1. 11-hexyl-2,3,5,6,11,11b-hexahydro-11b-methyl-1H-pyrido[3′,2′: 4,5]**pyrrolo**[3,2-g]indolizine.

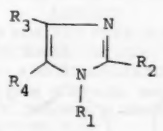
3,880,871

ISOTHIOCYANOPHENYL SUBSTITUTED IMIDAZOLES

Rudiger D. Haugwitz, Titusville, and Venkatachala L. Narayanan, Hightstown, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

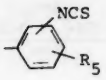
Filed Sept. 27, 1973, Ser. No. 401,305
Int. Cl. C07d *93/06*
U.S. Cl. 260—306.7 T 14 Claims

1. A compound having the structure



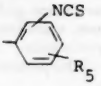
wherein R_1 is selected from the group consisting of hydrogen, alkyl, benzyl,

2-thiazolin-2-yl, 2-thiazine-2-yl and



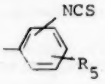
;

R_2 is selected from the group consisting of hydrogen, alkyl, phenyl, substituted phenyl and



;

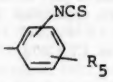
R_3 and R_4 are the same or different and are each selected from the group consisting of hydrogen, alkyl, halo, phenyl, substituted phenyl and



;

R_5 is selected from the group consisting of hydrogen and alkyl;

R_6 is selected from the group consisting of alkyl and phenyl; wherein the term alkyl refers to alkyl groups having up to seven carbon atoms; wherein the term alkoxy refers to alkoxy groups having up to seven carbon atoms; wherein at least one of R_1, R_2, R_3 and R_4 is



;

and wherein the expression substituted phenyl refers to phenyl substituted with alkyl, alkoxy, halo, carboxy or trifluoromethyl groups; and a physiologically acceptable acid-addition salt thereof.

3,880,872

PROCESS FOR PREPARING THIAZOLINE AZETIDINONES

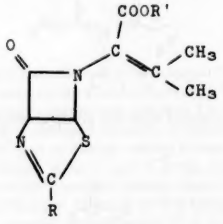
Stjepan Kukolja, Indianapolis, and Steven R. Lammert, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 182,556, Sept. 21, 1971, Pat. No. 3,832,347. This application May 16, 1974, Ser. No. 470,501

Int. Cl. C07d *91/42, 99/10*

U.S. Cl. 260—306.7 C **4 Claims**

1. A process for preparing a compound of the formula



wherein R is

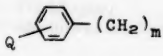
a. C_1 to C_8-alkyl,

b. C_3 to C_8cycloalkyl,

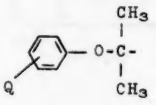
c. C_2 to C_8-alkenyl,

d. one of the above alkyl, cycloalkyl, or alkenyl groups substituted with C_1 to C_3-alkyloxy, chlorine, bromine, cyano or carbo-C_1 to C_3-alkyloxy;

e.



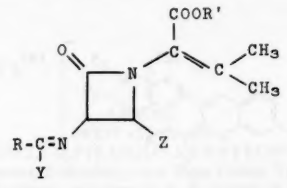
or



wherein in each group Q is hydrogen, chloro, bromo, C_1 to C_3-alkyl, C_1 to C_3-alkyloxy, nitro or cyano;

X is oxygen or a carbon to carbon bond, *m* is an integer of from 0 to 2, and *n* is an integer of from 1 to 2;

and R' is hydrogen, C_1 to C_4-normal or iso-alkyl, C_4 to C_6-tert-alkyl, C_5 to C_8-tert-alkenyl, C_5 to C_8-tert-alkynyl, benzyl, methoxybenzyl, nitrobenzyl, benzhydryl, phthalimido methyl, succinimidomethyl, phenacyl, 2,2,2-trichloroethyl or methoxymethyl which comprises treating a compound of the formula



wherein R and R' are as defined above, Y and Z are each chlorine or bromine with hydrogen sulfide or a C_1 to C_{12}-thioalkanoic acid or an alkali metal or ammonium salt thereof, in the presence of a base in an aprotic solvent at a temperature below about 70° C.

3,880,873

HERBICIDAL N(5-CHLOROTERT.BUTYL-1,3,4-THIADIAZOL-2-YL) CARBOXAMIDES

William C. Doyle, Jr., Leawood, and Joel L. Kirkpatrick, Overland Park, both of Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Division of Ser. No. 186,419, Oct. 4, 1971, Pat. No. 3,823,005. This application Aug. 9, 1973, Ser. No. 387,096

Int. Cl. C07d *91/62*

U.S. Cl. 260—306.8 D **2 Claims**

1. N-(5-Chlorotert.butyl-1,3,4-thiadiazol-2-yl) cyclopropanecarboxamide.

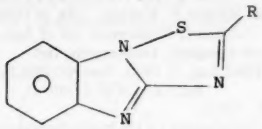
2. N-(5-α,α-Bischloromethylethyl-1,3,4-thiadiazol-2-yl) propionamide.

3,880,874
2-SUBSTITUTED -1,2,4-THIADIAZOLO-(2,3-A)BENZIMIDAZOLES AND PROCESS FOR THEIR PREPARATION

Colin C. Beard, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

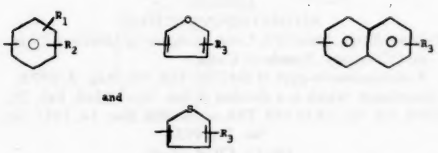
Filed Oct. 4, 1973, Ser. No. 403,474
Int. Cl. C07d 99/10
U.S. Cl. 260—306.8 F 15 Claims

1. A compound represented by the formula



I

wherein R is



in which R_1 and R_2 are hydrogen, lower alkoxy, halo, nitro, lower alkyl, lower alkylthio, lower alkylsulfinyl, or trifluoromethyl;

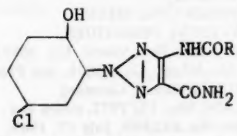
R_3 is hydrogen, lower alkoxy, halo, nitro, or lower alkyl; and the pharmaceutically acceptable salts thereof.

3,880,875
ULTRAVIOLET ABSORBING 2-(2-HYDROXYPHENYL) 2H-1,2,3-TRIAZOLE DERIVATIVES

Albert F. Strobel, 19 Albin Road, Delmar, N.Y. 12054, and Maynard L. Whitehouse, P.O. Box 341, Reading, Pa. 19603

Continuation of Ser. No. 853,932, Aug. 28, 1969, abandoned. This application Aug. 24, 1971, Ser. No. 174,562
Int. Cl. C07d 55/02, 57/00, 99/04
U.S. Cl. 260—308 A 8 Claims

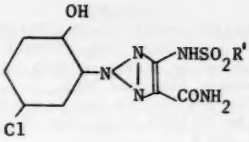
1. A compound of the formula



(I)

wherein R is methyl, tert-butyl, n-undecyl, phenyl, 2-furoyl or 2-thienyl

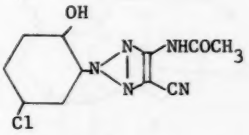
or



(II)

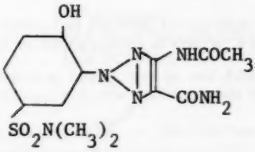
wherein R is phenyl or 4-pryazolyl

or



(III)

or



(IV)

3,880,876
PROCESS FOR THE PREPARATION OF 6-ARYL-4H-S-TRIAZOLO-[4,3-A][1,4]BENZODIAZEPINES

John H. Sellstedt, King of Prussia, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Nov. 3, 1972, Ser. No. 303,589
Int. Cl. C07d 99/02
U.S. Cl. 260—308 R 1 Claim

1. A process for the preparation of 8-chloro-6-(o-chlorophenyl)-4-methoxy-1-methyl-4H-s-triazolo[4,3-a][1,4]benzodiazepine which comprises: (a) treating 2,7-dichloro-5-(o-chlorophenyl)-3-methoxy-3H-1,4-benzodiazepine with acethydrazide in the presence of a hydrogen halide absorber; and (b) warming.

3,880,877
PROCESS FOR THE PREPARATION OF 6-ARYL-4H-S-TRIAZOLO(4,3-A)(1,4)BENZODIAZEPINES

John H. Sellstedt, King of Prussia, and Daniel M. Teller, Devon, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Nov. 3, 1972, Ser. No. 303,668
Int. Cl. C07d 99/02
U.S. Cl. 260—308 R 1 Claim

1. A process for the preparation of 8-chloro-6-(o-chlorophenyl)-4-methoxy-1-methyl-4H-s-triazolo[4,3-*a*][1,4]benzodiazepine which comprises warming 2,7-dichloro-5-(o-chlorophenyl)-3-methoxy-3H-1,4-benzodiazepine with 5-methyl tetrazole in the presence of a hydrogen halide absorber.

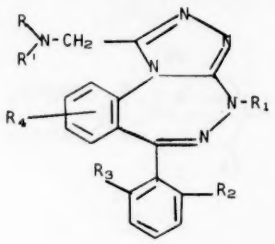
3,880,878

1-AMINOALKYL-6-PHENYL-4H-S-TRIAZOLO-[4,3-][1,3,4]BENZOTRIAZEPINES

Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 21, 1974, Ser. No. 434,811
Int. Cl. C07d *57/02, 57/04, 99/02*
U.S. Cl. 260—308 R **9 Claims**

1. A compound of the formula



wherein R is hydrogen or alkyl of 1 to 3 carbon atoms inclusive; wherein R′ is alkyl as defined above, or together

is pyrrolidino, piperidino, morpholino or 4-methylpiperazino; wherein R_1 is hydrogen or alkyl defined as above; wherein R_2 and R_3 are hydrogen, chloro or fluoro, and wherein R_4 is hydrogen, chloro or nitro, and the pharmacologically acceptable acid addition salts thereof.

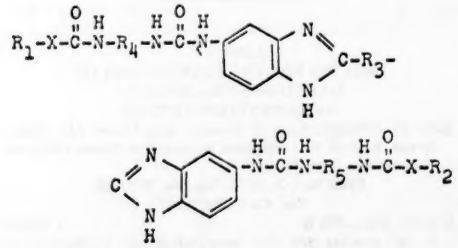
3,880,879

DIBENZIMIDAZOLE COMPOUNDS

August H. Birke, Godfrey, Ill., assignor to Shell Oil Company, New York, N.Y.

Division of Ser. No. 296,733, Oct. 11, 1972, Pat. No. 3,785,979, which is a continuation-in-part of Ser. No. 169,459, Aug. 5, 1971, abandoned. This application Sept. 27, 1973, Ser. No. 401,516
Int. Cl. C10m *5/20*
U.S. Cl. 260—309.2 **8 Claims**

1. A dibenzimidazole compound corresponding to the formula:



wherein R_1 and R_2 are aliphatic hydrocarbyl radicals having six to 30 carbon atoms, R_3 is a hydrocarbylene radical having from two to 20 carbon atom, R_4 and R_5 are aromatic hydrocarbylene radicals having from six to 20 carbon atoms and X is —O— or

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3,880,880

SUBSTITUTED 2 -AZETIDINESULFENIC ACID

Alvin I. Ellis, Stjepan P. Kukolja, both of Indianapolis, and Steven R. Lammert, Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 3, 1973, Ser. No. 385,368
Int. Cl.² C07D *27/00*
U.S. Cl. 260—326 S **4 Claims**

1. 3R-Phthalimido-1-(1′S-p-nitrobenzyloxycarbonyl-2′-methylprop-2′enyl)-4-oxo-2-azetidinesulfenic acid.

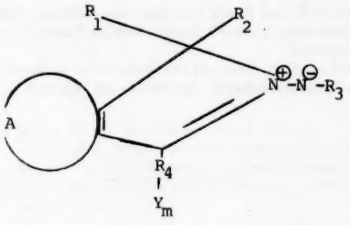
3,880,881

AZOMETHINIMINE DYES

Balwant Singh, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 168,745, Aug. 3, 1971, abandoned, which is a division of Ser. No. 14,240, Feb. 25, 1970, Pat. No. 3,634,085. This application Mar. 14, 1973, Ser. No. 340,993
Int. Cl. C07d *27/48*
U.S. Cl. 260—326.1 **4 Claims**

1. An azomethinimine dye of the formula:



where A completes the benzene or naphthylene ring; R_1 and R_2 are the same or different members selected from the group consisting of alkyl having from 1 to 8 carbon atoms, phenyl, naphthyl and benzyl; R_3 is phenyl or naphthyl; Y is dimethylamino or methoxy; *m* is an integer from 0 to 1; R_4 is phenyl or naphthyl; and *n* is an integer from 0 to 1.

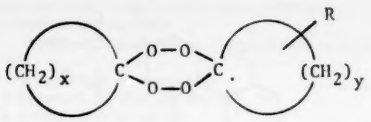
3,880,882

METHOD OF PRODUCING MIXED DICYCLOALKYLIDENE PEROXIDES

Paul Richard Story, 113 St. James Dr., Athens, Ga. 30604; Bunge Lee, 250 Hillside St., Athens, Ga. 30601, and Peter Busch, Frobelstrasse 3, 4156 Willich 1, Germany

Division of Ser. No. 253,576, May 15, 1972, which is a continuation-in-part of Ser. No. 842,689, July 17, 1969, abandoned. This application June 25, 1973, Ser. No. 373,092
Int. Cl. C07d *19/00*
U.S. Cl. 260—340.7 **1 Claim**

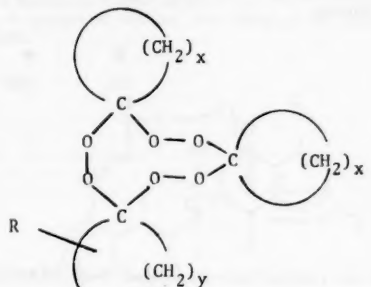
1. A method for preparing mixed dimeric peroxides of the formula:



wherein:

x and y are different and are integers from 4 to 17,

R is hydrogen or methoxy, which comprises allowing a solution of a trimeric peroxide having the formula:



wherein *x*, *y* and R have the above meanings in a liquid lower alkanoic acid solvent containing a catalytic amount of a strong acid to stand at a temperature of from about 0°C. to about 50°C.

3,880,883

2-(HYDROXYALKYL)-CYCLOPENTANE CARBALDEHYDES

Michael Peter Lear Caton, Upminster; Edward Charles John Coffee, London, and Gordon Leonard Watkins, Hornchurch, all of England, assignors to May & Baker Limited, Dagenham, Essex, England

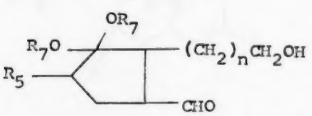
Filed June 12, 1972, Ser. No. 261,719

Claims priority, application United Kingdom, June 14, 1971, 27844/71; Jan. 25, 1972, 3455/72

Int. Cl. C07d *13/04*

U.S. Cl. 260—340.9 **4 Claims**

1. A 2 -hydroxyalkyl)cyclopentanecarbaldehyde of the formula:



wherein R_5 represents alkyl of 1 through 6 carbon atoms or hydrogen, n represents 5, 6, 7, or 8, and the symbols R_7 represent identical alkyl groups of 1 through 6 carbon atoms or together form ethylene

3,880,884

PRODUCTION OF UNSATURATED CARBOCYCLIC KETONES

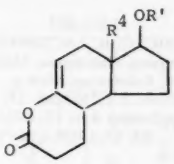
John H. Fried, Palo Alto, Calif., assignor to Syntex Corporation, Panama, Panama

Continuation-in-part of Ser. No. 687,502, Dec. 4, 1967, Pat. No. 3,639,428. This application July 25, 1968, Ser. No. 747,465

Int. Cl. C07d *7/24*

U.S. Cl. 260—343.2 S **2 Claims**

1. A tricyclic enol lactone of the following formula:



wherein R^4 is methyl or ethyl and R' is t-butyl.

3,880,885

TERTIARY AMINOETHYL ISOCHROMANS AND ISOCOUMARINS

William J. Houlihan, Baden, Austria, and Jeffrey Nadelson, Lake Parisippany, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 201,558, Nov. 23, 1971, abandoned, which is a continuation-in-part of Ser. No. 57,315, July 22, 1970, abandoned. This application Mar. 7, 1972, Ser. No. 232,614

Int. Cl. C07d *7/24*

U.S. Cl. 260—343.2 R **5 Claims**

1. 3-[2-(dimethylamino)ethyl]-3,4-dihydro-3-phenyl isocoumarin.

3,880,886

COUMARINS AND COUMARINIMIDES

Werner Koch, Oberwil, Basel-Land, Switzerland, assignor to Sandoz Ltd. (a/k/a Sandoz AG), Basel, Switzerland

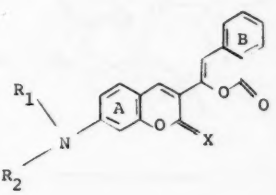
Filed Mar. 12, 1973, Ser. No. 340,240

Claims priority, application Sweden, Mar. 15, 1972, 3769/72

Int. Cl. C07d *7/26*

U.S. Cl. 260—343.2 R **17 Claims**

1. A compound of the formula



in which x is O or NH,

either R_1 is substituted or unsubstituted and is alkyl of 1 to 6 carbon atoms or phenyl,

R_2 is hydrogen, substituted or unsubstituted alkyl of 1 to 6 carbon atoms or substituted or unsubstituted phenyl,

rings A and B may be further substituted; any substituent on substituted alkyl is chlorine, bromine, alkoxy of 1 to 6 carbon atoms, hydroxyl, cyano, thiocyano, vinyl, amino, alkylamino of 1 to 6 carbon atoms, dialkyl- or N-phenyl-N-alkylamino in which the alkyl moieties are of 1 to 6

carbon atoms, phenyl, phenoxy, acyl, acyloxy and acylamino, any substituent or substituted phenyl or on further substituted ring A or ring B is alkyl of 1 to 6 carbon atoms, nitro or a substituent specified above for alkyl, and the acyl portion of any acyl, acyloxy or acylamino groups is R—O—CO—, R—SO_2—, R—O—SO_2—, R′—NR′SO_2—, R′—NR′CO— or R′—CO—, in which R is alkyl of 1 to 6 carbon atoms or phenyl, and R′ is hydrogen, alkyl of 1 to 6 carbon atoms or phenyl.

3,880,887

BICYCLIC LACTONES

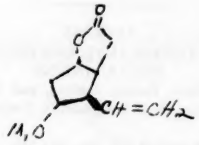
Verlan H. Van Rheenen, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 273,785, July 21, 1972, Pat. No. 3,823,138. This application Apr. 19, 1974, Ser. No. 462,233

Int. Cl. C07d *5/06*

U.S. Cl. 260—343.3 **3 Claims**

1. An optically active compound of the formula



wherein M_1 is tetrahydropyranyl.

3,880,888

3,4,7-TRIMETHYL-2-OXO,-1,6-DIOXASPIRO(4,5)DEC-3-NE

Edouard P. Demole, Coppet, VD, Switzerland, assignor to Firmenich S.A., Geneva, Switzerland

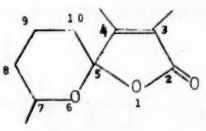
Filed June 14, 1973, Ser. No. 370,049

Claims priority, application Switzerland, June 16, 1972, 9076/72

Int. Cl. C07d *5/06*

U.S. Cl. 260—343.6 **3 Claims**

1. A composition of matter consisting essentially of a compound of formula



I

3,880,889

PHENANTHRENE-2-CARBOXYLIC ACIDS

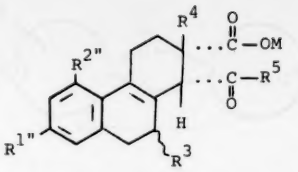
John A. Edwards, Los Altos, and John H. Fried, Palo Alto, both of Calif., assignors to Syntex Corporation, Panama, Panama

Division of Ser. No. 638,648, May 15, 1967, Pat. No. 3,657,329. This application July 12, 1971, Ser. No. 161,932

Int. Cl. C07c *65/18, 65/20*

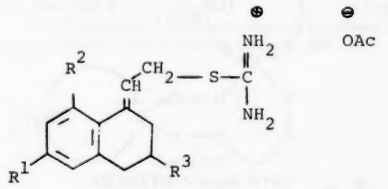
U.S. Cl. 260—345.7 **11 Claims**

1. A process for the production of a cis keto acid salt selected from those of the following formula

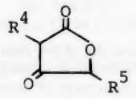


which comprises the steps of:

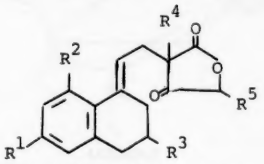
a. commingling an isothiouronium salt of the following formula



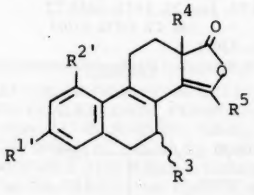
with, and reacting therewith, at about room temperature, a tetronic acid of the following formula



in an aqueous solution of a water-miscible organic solvent to obtain a tricyclic compound of the following formula



b. cyclizing said tricyclic compound by treatment with acid either alone or in an inert organic solvent at a temperature from about room temperature to about the reflux temperature of said solvent, if any, to obtain a tetracyclic compound of the following formula

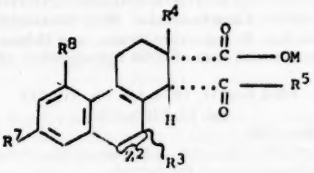


and

c. treating said tetracyclic compounds with an aqueous watermiscible organic solvent solution of an alkali hydroxide at a temperature of from about 0°C to about room temperature for about 1 to 3 hours to obtain said cis

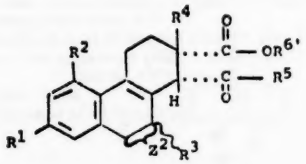
keto acid salt, wherein in the above formulas,
M is sodium or potassium;
R^1 is hydroxy, lower alkoxy, cyclopentyloxy or cyclohexyloxy;
R^2 is hydrogen, or lower alkyl;
R^3 is hydrogen, methyl, or ethyl;
R^4 is methyl, ethyl or propyl;
R^5 is hydrogen, methyl, ethyl or propyl;
R^1 is hydroxy, lower alkoxy, cyclopentyloxy, cyclohexyloxy, or lower hydrocarbon carboxylic acyloxy;
R^2 is hydrogen, or lower alkyl;
R^1 is hydroxy, lower alkoxy, cyclopentyloxy, cyclohexyloxy, lower hydrocarbon carboxylic acyloxy, tetrahydropyran-2-yloxy or tetrahydrofuran-2-yloxy; and
R^2 is hydrogen, or lower alkyl.

4. A compound selected from those of the following formula:



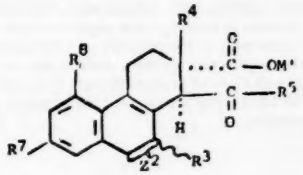
wherein,
M is sodium or potassium;
R^3 is hydrogen, methyl or ethyl;
R^4 is methyl, ethyl or propyl; and
R^5 is hydrogen, methyl, ethyl or propyl;
R^7 is hydroxy, lower alkoxy, cyclopentyloxy, cyclohexyloxy, tetrahydropyran-2-yloxy, or tetrahydrofuran-2-yloxy;
R^8 is hydrogen or lower alkyl; and
Z^2 is a carbon-carbon single or double bond between C-9 and C-10 provided that when R^7 is lower alkoxy and Z^2 is a single bond that at least one of R^3, R^5 and R^8 is other than hydrogen.

6. A compound selected from those of the following formula:



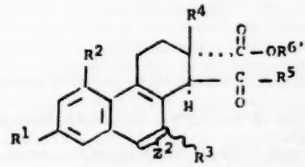
wherein,
R^1 is hydroxy, lower hydrocarbon carboxylic acyloxy, lower alkoxy, cyclopentyloxy, cyclohexyloxy;
R^2 is hydrogen or lower alkyl;
R^3 is hydrogen, methyl or ethyl;
R^4 is methyl, ethyl or propyl;
R^5 is hydrogen, methyl, ethyl or propyl;
R^6 is lower alkyl; and
Z^2 is a carbon-carbon single bond or double bond between C-9 and C-10.

8. A compound selected from those f the following formula:



wherein,
M′ is hydrogen, sodium or potassium;
R^3 is hydrogen, methyl or ethyl;
R^4 is methyl, ethyl or propyl;
R^5 is hydrogen, methyl, ethyl or propyl;
R^7 is hydroxy, lower alkoxy, cyclopentyloxy, cyclohexyloxy, tetrahydropyran-2-yloxy, or tetrahydrofuran-2-yloxy;
R^8 is hydrogen or lower alkyl; and
Z^2 is a carbon-carbon single or double bond between C-9 and C-10 provided that when R^7 is lower alkoxy and Z^2 is a single bond that at least one of R^3, R^5 and R^8 is other than hydrogen.

9. A compound selected from those of the following formula:



wherein,
R^1 is hydroxy, lower hydrocarbon carboxylic acyloxy, lower alkoxy, cyclopentyloxy, cyclohexyloxy, tetrahydropyran-2-yloxy or tetrahydrofuran-2-yloxy;
R^2 is hydrogen or lower alkyl;
R^3 is hydrogen, methyl or ethyl;
R^4 is methyl, ethyl or propyl; and
R^5 is hydrogen, methyl, ethyl or propyl;
R^6 is lower alkyl; and
Z^2 is a carbon-carbon single bond or double bond between C-9 and C-10.

3,880,890

MANUFACTURE OF 3,4,9,10-PERYLENETETRACARBOXYLIC ACID DIANHYDRIDE PIGMENTS HAVING HIGH TINCTORIAL STRENGTH

Wolfgang Fabian, Wilhelmsfeld, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Oct. 23, 1973, Ser. No. 408,418

Claims priority, application Germany, Oct. 24, 1972, 2252041

Int. Cl. C07d *7/46*

U.S. Cl. 260—345.2 **4 Claims**

1. An improved process for the manufacture of 3,4,9,10-perylenetetracarboxylic acid dianhydride pigments by treating powdered raw pigment with sulfuric acid, wherein the improvement consists in treating a raw pigment which has been ground dry, optionally in the presence of solid grinding aids, and which has an average primary particle size of between 0.01 and 1μ, with 80 to 95 percent strength by weight sulfuric acid at 10° to 100°C until the pigment has acquired optimum tinctorial strength.

3,880,891

SUBSTITUTED BENZOFURANS

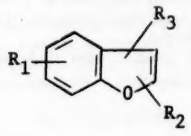
David T. Hill, North Wales, and Bernard Loev, Broomall, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Sept. 21, 1973, Ser. No. 399,573

Int. Cl. C07d *5/42*

U.S. Cl. 260—346.2 R **8 Claims**

1. A compound of the formula:

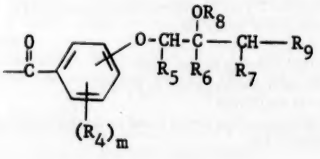


or a pharmaceutically acceptable acid addition salt thereof, in which:

R_1 is hydrogen, halogen, lower alkyl, lower alkoxy or trifluoromethyl;

R_2 is hydrogen, lower alkyl or phenyl$(CH_2)_n$ where n is 0 or 1 and the phenyl moiety is optionally substituted with lower alkyl, lower alkoxy, trifluoromethyl, halogen, NH_2, NH(lower alkyl) or N(lower alkyl)$_2$;

R_3 is



;

R_4 is hydrogen, halogen, lower alkyl or lower alkoxy;

m is 1 or 2;

R_5, R_6 and R_7 are hydrogen or one of R_5, R_6 and R_7 is methyl or ethyl;

R_8 is hydrogen or lower alkanoyl; and

R_9 is NH(lower alkyl), N(lower alkyl)$_2$, NH(benzyl), N(lower alkanoyl)(lower alkyl), piperidino, pyrrolidino, morpholino or succinimido.

3,880,892

PRODUCTION OF 1-AMINO-4-HYDROXYANTHRAQUINONES SUBSTITUTED IN THE 2- AND/OR 3-POSITIONS

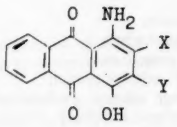
Heinrich Hiller, Corneliusstrasse, 6800 Mannheim; Alfred Schuhmacher, 36 von-weber-Strasse, and Helmut Goerth, 15 Rubensstrasse, both of 6700 Ludwigshafen, all of Germany

Filed Dec. 15, 1974, Ser. No. 315,473

Int. Cl. C09b *1/50*

U.S. Cl. 260—380 **8 Claims**

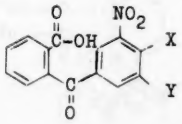
1. A process for the production of a 1-amino-4-hydroxyanthraquinone of the formula



in which

X is chlorine, bromine or hydroxy and Y is hydrogen, chlorine or bromine,

wherein a 3'-nitrobenzoyl-benzoic acid of the formula



in which X and Y having the meanings defined above, is heated in 90 to 100 weight percent sulfuric acid or in oleum with up to 15 weight percent of free sulfur trioxide in the presence of boric acid, a boric ester, a boron trihalide or a boron trihalide complex to 120° to 200°C.

3,880,893

PREPARATIONS OF BENZOQUINONE AND DERIVATIVES THEREOF

Winston Costain, and Bernard William Hugh Terry, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 23, 1971, Ser. No. 127,406

Claims priority, application United Kingdom, Apr. 22, 1970, 19287/70

Int. Cl. C07c *49/64*

U.S. Cl. 260—396 R 6 Claims

1. A process for the manufacture of benzoquinone or an alkyl or halogenobenzoquinone which comprises uninterruptedly bringing together and mixing aniline or a monosubstituted o- or m-alkyl or halogenoaniline with from 0.65 to 2.0 molar proportions of chromic acid in sulphuric acid medium of N to 15N strength, the concentration of aniline or alkyl or halogenoaniline in the sulphuric acid being from 0.1% to 7% by weight, in a reaction zone at 0° to 100° C and keeping the mixed substance in the reaction zone for a total time effective to produce benzoquinone or an alkyl or halogenobenzoquinone but not exceeding x minutes, the relationship between x and the temperature y in °C being according to the equation

$$y^2 = \frac{12500}{x^{1/2} + 0.8}$$

provided that for temperatures (y) which according to said equation would be related to a maximum residence time (x) in excess of 360, the maximum residence time in no case exceeds 360 minutes.

3,880,894

1,25-DIHYDROXYERGOCALCIFEROL

Hector F. De Luca; Glenville Jones, both of Madison, and Heinrich K. Schnoes, Waunakee, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed May 24, 1974, Ser. No. 472,953

Int. Cl. C07C *171/08*

U.S. Cl. 260—397.2 1 Claim

1. 1,25-Dihydroxyergocalciferol.

3,880,895

HYDROXYLATION OF D-13-ALKYL-17α-ETHYNYL-HYDROXYGON-4-EN-3-ONE AND DERIVATURES THEREOF

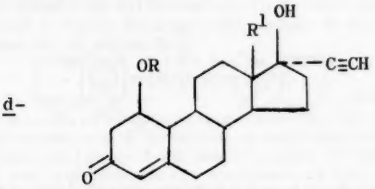
George Greenspan, Narberth, and Richard W. Rees, Bryn Mawr, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 274,012, July 21, 1972, abandoned. This application Oct. 16, 1973, Ser. No. 407,015

Int. Cl. C07c *169/20*

U.S. Cl. 260—397.4 4 Claims

1. A compound of the structure:



wherein R is hydrogen or acetyl and R^1 is methyl or ethyl.

3,880,896

CHEMICAL COMPOUNDS

Gordon Hanley Phillipps, 8 Sudbury Hill Close, Wembley, and Robin Lawrence, 62 Hazell Way, Stoke Poges, both of England

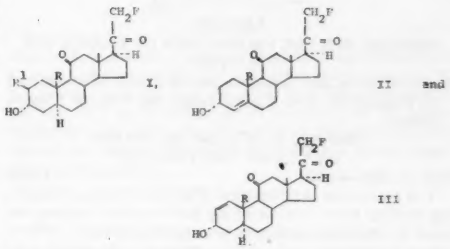
Filed May 1, 1973, Ser. No. 356,096

Claims priority, application United Kingdom, May 5, 1972, 21144/72

Int. Cl. C07c *169/30*

U.S. Cl. 260—397.45 4 Claims

1. A steroid selected from the group consisting of a compound of the formula



I, II and III

where R is —H or —CH_3 and R^1 is H or C_1–C_6 alkoxy.

3,880,897

METHOD OF MAKING ACYL ESTERS OF HYDROXY ALKANE SULFONATES

Herbert G. Landy, Skokie, Ill., assignor to The Gillette Company, Boston, Mass.

Filed Sept. 13, 1973, Ser. No. 397,018

Int. Cl. C07c *143/90*; C08h *3/00*

U.S. Cl. 260—400 7 Claims

1. The method of making an acyl ester of a hydroxy alkane sulfonate which comprises heating at the boiling point a mixture of a member of the group consisting of ammonium and alkali metal salts of a hydroxy alkane sulfonic acid having from 2 to 4 carbon atoms with an acylating agent selected from the group consisting of saturated and unsaturated fatty acid chlorides and bromides having from 8 to 22 carbon atoms in an anhydrous medium for said salt and for said acylating agent consisting of a dialkyl ketone having from 4 to 8 carbon atoms, cooling to a temperature below the boiling point, and separating the insoluble solid product from the solution.

3,880,898

PROCESS FOR PREPARING HALOGENIDES OF CARBOXYLIC ACIDS

John F. Knifton, Poughquag, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Aug. 3, 1973, Ser. No. 385,530

Int. Cl. C09f *7/00*

U.S. Cl. 260—408 8 Claims

1. A process for catalytically transforming alkene substrates containing 2 and more carbon atoms and only one carbon to carbon double bond, to acyl halides containing one more carbon atom than the alkene substrate by:

a. admixing under a deoxygenated environment, each mole of alkene substrate to be transformed to acyl halides with

at least a stoichiometric quantity of hydrogen halide, and at least a catalytic quantity of a homogeneous noble metal catalyst composition selected from the group consisting of:

$PdCl_2]P(p—CH_3—C_6H_4)_3]_2—SnCl_2$, $PdCl_2[P(C_6H_5)_3]_2—SnCl_2$, $PdBr_2[P(p—CH_3O.C_6H_4)_3]_2—SnBr_2$, $PdCl_2[P(p—CH_3O—C_6H_4)_3]_2—SnCl_2$, $PtCl_2[As(C_6H_5)_3]_2—SnCl_2$, $PtCl_4—SnCl_2$ and $PdCl_2[P(C_6H_5)_3]_2—GeCl_2$, said catalysts being solubilized in a halogenated paraffinic solvent, until a deoxygenated reaction mixture is formed, and

b. heating said admixed, deoxygenated reaction mixture between about 20° and 120°C while said mixture is under superatmospheric pressure by at least stoichiometric quantities of carbon monoxide, until said acyl halides are produced.

3,880,899
PROCESS FOR THE PRODUCTION OF KARITE NUT BUTTER

Robert Marteau, and Antoinette Danvin Epouse Marteau, both of Festival 95, Ave. Cyrille Besset, 06 Cros de Cagnes, France

Filed Aug. 2, 1973, Ser. No. 384,828
Int. Cl. C09f *5/02*; **C11b** *1/00*
U.S. Cl. 260—412.2 **1 Claim**

1. A process for the extraction of karite nut butter, comprising shelling karite nuts to obtain karite seeds, crushing the seeds to small pieces, heating the crushed pieces in earthenware vessels to drive off volatile compounds, fine grinding the crushed and heated pieces to a paste which is mixed with water, heating the water to about 70°–80°C, while stirring the paste with wooden stirrers, bringing the paste to its boiling point, skimming the karite nut butter from the surface of the mixture, and thereafter adding about 2 percent of wood ash and karite leaves to the nut butter.

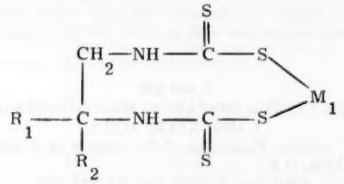
3,880,900
PROCESS FOR PREPARING METAL COMPLEX OF ALKYLENE BISDITHIOCARBAMATE

Machida, Chiyuki Fujii, Yamato, and Yukio Hasegawa, Tokyo, both of Japan, assignors to Denki Kogaku Kogyo K.K., Tokyo, Japan

Continuation-in-part of Ser. No. 167,646, July 30, 1971, abandoned. This application Dec. 14, 1972, Ser. No. 315,010
Claims priority, application Germany, July 28, 1971, 2137779
Int. Cl. C07f *15/00*, *9/00*, *3/00*
U.S. Cl. 260—429 K **4 Claims**

1. A process for preparing a metal salt of an alkylene bis-dithiocarbamate, which comprises;

reacting in a solid phase reaction, in the presence of a solvent, a difficultly water-soluble metal salt of an alkylene bis-dithiocarbamate having the formula:



wherein R_1 is selected from the group consisting of hydrogen, methyl and ethyl and R_2 is selected from the group consisting of methyl, ethyl and propyl, such that when R_1 is hydrogen, R_2 represents methyl, ethyl or propyl; when R_1 is methyl, R_2 represents methyl, ethyl or propyl; when R_1 is ethyl, R_2 represents ethyl or propyl; and wherein M_1 is selected from the group consisting of manganese, iron, cobalt, nickel, zinc, lead, and an alkaline earth metal, with a soluble, divalent metal salt having a metal ion M_2, which is different from said M_1 and which is selected from the group consisting of manganese, zinc, iron, cobalt, lead, nickel, and copper, so that at least a portion of said M_1 is substituted with a different metal of the M_2 group.

3,880,901
ALUMINUM-CONTAINING PHARMACEUTICAL COMPOSITIONS

John Harry Wallice Turner, Chapel-en-le-Frith, England, assignor to Hardman & Holden Limited, Miles Platting, Manchester, England

Filed July 3, 1972, Ser. No. 268,266
Claims priority, application United Kingdom, Jan. 28, 1972, 4035/72; July 6, 1971, 31658/71
Int. Cl. C07f *5/06*
U.S. Cl. 260—448 AD **11 Claims**

1. The process for the production of a pharmaceutically active composition which comprises intimately mixing ice or water with powdered acetylsalicylic acid in the absence of added solvent thereby obtaining an evenly distributed powdered mixture and then adding an aluminum alkoxy compound selected from aluminum alkoxide, oxoaluminum alkoxide, and mixtures thereof to the premix of ice or water and acetylsalicylic acid and then allowing the temperature to rise so that the condensation reaction between the acetylsalicylic acid and the aluminum alkoxy compound and hydrolysis take place.

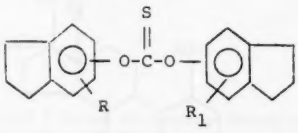
10. The process for the production of a pharmaceutically active compound which comprises intimately mixing ice or water with a powdered pharmaceutically active compound in the absence of added solvent thereby obtaining an evenly distributed powdered mixture and then adding an aluminum alkoxy compound selected from aluminum alkoxide, oxoaluminum alkoxide, and mixtures thereof to the premix of ice or water and pharmaceutically active compound and then allowing the temperature to rise so that the condensation reaction between the pharmaceutically active compound and the aluminum alkoxy compound and hydrolysis take place, wherein said pharmaceutically active compound is guaiphenesin.

3,880,902
INDANOL DIESTERS WITH THIOCARBONIC ACID

Hermann Breuer, Regensburg, Germany, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 11, 1974, Ser. No. 460,007
Int. Cl. C07c *154/00*
U.S. Cl. 260—455 B **8 Claims**

1. A compound of the formula



wherein R and R_1 each is hydrogen, lower alkyl, halo or trifluoromethyl.

3,880,903

N-(CYANOALKY)-3,5-DICHLOROBENZAMIDE

Wolfgang Rohr, Mannheim; Karl-Heinz Koenig, Frankenthal, and Adolf Fischer, Mutterstadt, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

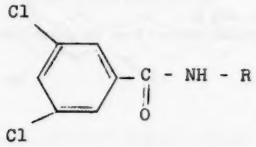
Filed July 17, 1972, Ser. No. 272,367

Claims priority, application Germany, Aug. 12, 1971, 2140438

Int. Cl. C07c *103/22, 121/78*

U.S. Cl. 260—465 D 4 Claims

1. The compound of the formula



where R is alkyl of 3 to 4 carbon atoms branched on the carbon atom in α-position to nitrogen, said alkyl being substituted by cyano.

3,880,904

HYDROCINNAMONITRILES

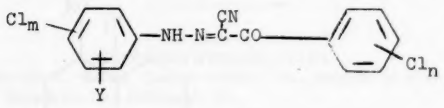
Donald Perry Wright, Jr., Pennington; Donald Frederic Barringer, Jr., Trenton, and Donald Edward McKay, Highland Park, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 250,338, May 4, 1972, Pat. No. 3,793,456, and a continuation-in-part of Ser. No. 141,444, May 7, 1971, abandoned. This application May 21, 1973, Ser. No. 362,617

Int. Cl. C07c *121/78*

U.S. Cl. 260—465 E 5 Claims

1. A hydrocinnamonitrile compound having the formula:



where

Y is hydrogen, chloro or lower alkyl (C_1–C_4);

m is 1 or 2; and

n is 0, 1 or 2.

3,880,905

CONVERSION OF ESTER GROUPS TO HYDROCARBON

Richard V. Norton, Wilmington, Del., assignor to Sun Ventures, Inc., St. Davids, Pa.

Filed Sept. 17, 1973, Ser. No. 398,033

Int. Cl. C07c *15/00, 121/02*

U.S. Cl. 260—465 B 5 Claims

1. A process for the conversion of a lower alkyl ester group of an aromatic acid of the benzene or naphthalene series to the lower alkyl group of said ester by reacting the aromatic acid ester with ammonia at a temperature of from about 200°C to about 500°C over an acidic dehydration catalyst hydrated prior to initiating the process.

3,880,906

NOVEL COMPOUNDS RELATED TO PROSTAGLANDINS

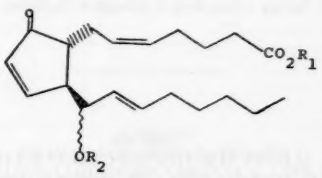
Robert L. Spraggins, San Jose, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Filed May 24, 1971, Ser. No. 146,530

Int. Cl. C07c *61/36, 69/74*

U.S. Cl. 260—468 D 6 Claims

1. Novel compounds of the formula:



wherein R_1 is a member selected from the group consisting of hydrogen and lower alkyl of 1 to 8 carbon atoms inclusive, R_2 is a member selected from the group consisting of hydrogen and acyl of 1 to 18 carbon atoms selected from the group consisting of alkanoyl, alkenoyl and aroyl, and non-toxic salts thereof and wherein OR_2 at the 13 position is in the rectus-sinister configuration.

3,880,907

ARYLSULFONYLFORMAMIDOXIMES

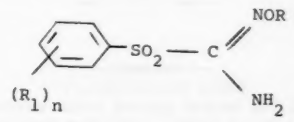
Uwe D. Treuner, Regensburg, Germany, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 190,693, Oct. 19, 1971, Pat. No. 3,736,356. This application Mar. 16, 1973, Ser. No. 342,019

Int. Cl. C07c *147/06, 147/12*

U.S. Cl. 260—470 6 Claims

1. A compound of the formula



wherein R is $CO(CH_2)_mR_2$; R_1 is hydrogen, halogen, lower alkyl or lower alkanoylamido; R_2 is COOH or COO-lower alkyl; *m* is 1 to 4; and *n* is 1 to 3,

and pharmaceutically acceptable salts thereof.

3,880,908

URETHANE DERIVATIVES OF POLYMETHYL BIPHENYL USEFUL AS FUNGICIDES

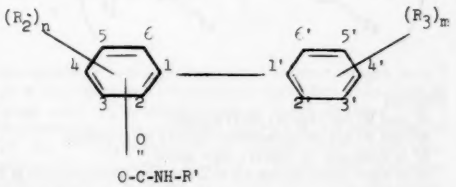
Ellis K. Fields, River Forest, and Imre Puskas, Glen Ellyn, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Jan. 24, 1972, Ser. No. 220,367

Int. Cl. C07c *125/06*

U.S. Cl. 260—471 C 17 Claims

1. A urethane derivative of polymethyl biphenyl having the following formula:



wherein the

O
"
O-C-NH-R'

group occupies the 2 or 3 position on the phenyl ring, and wherein R' is a lower alkyl, phenyl, nitrophenyl or chlorophenyl group, R_2 and R_3 are methyl groups and *n* and *m* are integers having values from 2 through 4, inclusive.

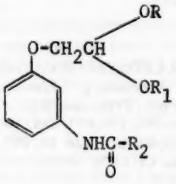
3,880,909

ALKOXY SUBSTITUTED CARBANILATES

Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 124,541, March 15, 1971, Pat. No. 3,780,104. This application Aug. 3, 1973, Ser. No. 385,515
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C **3 Claims**

1. A compound having the formula



in which R and R_1 are independently lower alkyl and R_2 is alkoxy.

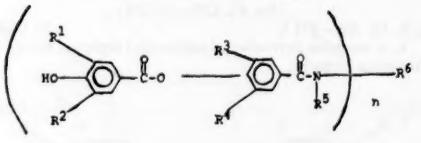
3,880,910

3,5-DIALKYLBENZOYLOXY-3'-5'-DIALICYLBENZAMIDES

John D. Spivack, Spring Valley, and John J. Luzzi, Carmel, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 26, 1972, Ser. No. 318,325
Int. Cl. C07c *103/30, 103/88*
U.S. Cl. 260—473 S **9 Claims**

1. A Benzoyloxybenzamide having the formula



Wherein
R^1 and R^2 are (lower) alkyl groups,
R^3 and R^4 are independently (lower) alkyl groups,
R^5 is hydrogen or (lower) alkyl group,
R^6 is alkyl group having up to 24 carbon atoms when *n* is 2 to 6, and
n is an integer 1 to 6.

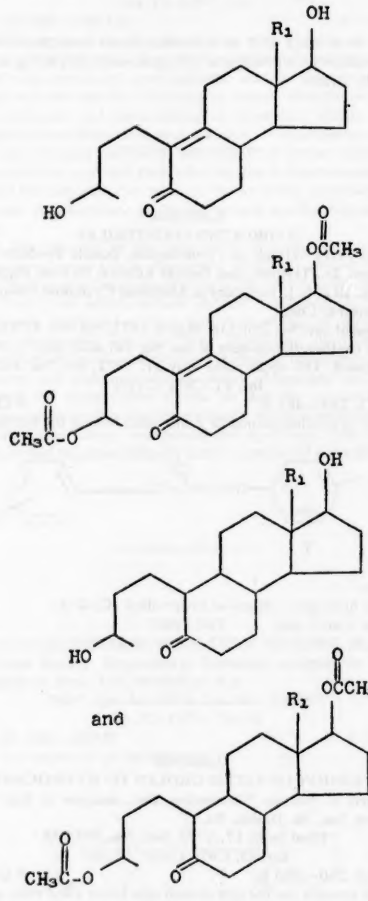
3,880,911

DES-A STEROIDAL INTERMEDIATES

Gabriel Saucy, Essex Fells, N.J., assignor to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 57,372, July 22, 1970, Pat. No. 3,816,458, which is a continuation-in-part of Ser. No. 629,989, Nov. 2, 1967, Pat. No. 3,544,598, which is a continuation-in-part of Ser. No. 633,730, April 26, 1967, abandoned, which is a continuation-in-part of Ser. No. 604,124, Dec. 23, 1966, abandoned, which is a continuation-in-part of Ser. No. 549,816, May 13, 1966, abandoned, and a continuation-in-part of Ser. No. 813,693, April 4, 1969, abandoned. This application Mar. 13, 1974, Ser. No. 450,694
Int. Cl. C07c *69/14, 49/30*
U.S. Cl. 260—488 B **1 Claim**

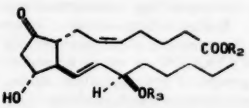
1. A compound selected from the group consisting of



where R_1 is a primary alkyl group from 1 to 5 carbon atoms.

3,880,912
COMPOSITION AND PROCESS
John E. Pike, and William P. Schneider, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 159,478, July 2, 1971, Pat. No. 3,722,350, which is a continuation-in-part of Ser. No. 71,390, Sept. 11, 1970, abandoned. This application Oct. 3, 1973, Ser. No. 403,092
Int. Cl. C07c 69/16
U.S. Cl. 260—488 R 3 Claims

1. A compound of the formula:



wherein R_2 and R_3 are both hydrogen, or wherein R_2 is methyl and R_3 is hydrogen or acetyl, said compound being essentially free of the other components of colonies of the subclass Octocorallia.

3,880,913
DEHYDROFORMYLATION OF ACETOXYBUTYRALDEHYDES
William F. Smith, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed June 20, 1973, Ser. No. 371,929
Int. Cl. C07c 67/00
U.S. Cl. 260—491 6 Claims

1. The process of producing allyl acetate, 1-propenyl acetate or mixtures thereof which comprises dehydroformylating 4-acetoxybutyraldehyde, 2-acetoxybutyraldehyde, 3-acetoxy-2-methylpropionaldehyde or mixtures thereof at a temperature in the range of 120°–250° C. in a nonoxidizing atmosphere and in the presence of a catalyst selected from the group consisting of a Group VIII noble metal and mixtures thereof or a Group VIII noble metal and mixtures thereof on an essentially neutral support.

3,880,914
DIPERISOPHTHALIC ACIDS
Donald R. Nielsen, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Division of Ser. No. 873,058, Oct. 31, 1969, Pat. No. 3,655,738, which is a continuation-in-part of Ser. No. 655,994, July 26, 1967, abandoned. This application Aug. 3, 1971, Ser. No. 168,777
Int. Cl. C07c 73/10
U.S. Cl. 260—502 R 2 Claims

1. A solid diperisophthalic acid composition, the diperisophthalic acid content of which consists essentially of diperisophthalic acid in that crystal form having characteristic X-ray diffraction powder pattern interplanar spacings as follows:

A
9.17
5.50
4.21
3.75
3.54
3.26
3.20
3.15
2.44
2.39
2.30
1.97
1.93
1.87
1.84
1.80
1.61

and having major line intensities at interplanar spacings of 4.21, 3.20 and 2.39 A.

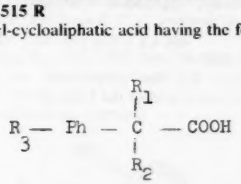
3,880,915
METHOD FOR PREPARATION OF $\Delta^{2,5}$-CYCLOHEXADIENE DICARBOXYLIC ACID-1,2 BY REDUCING AQUEOUS SOLUTIONS OF ALKALI PHTHALATE WITH ALKALI AMALGAM
Harald Von Metnitz, Cologne; Otto Bleh, Bergheim, and Arnold Lenz, Cologne-Stammheim, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany
Filed Oct. 20, 1971, Ser. No. 191,130
Claims priority, application Germany, Oct. 30, 1970, 2053289
Int. Cl. C07c 51/36
U.S. Cl. 260—514 K 11 Claims

1. A method for the preparation of $\Delta^{2,5}$-cyclohexadiene dicarboxylic acid-1,2 comprising

reacting alkali metal amalgam with an alkali phthalate solution at a temperature from about 10° to 90°C and a pH greater than 7 whereby the phthalate is reduced to form $\Delta^{2,5}$-cyclohexadiene dicarboxylic acid-1,2.

3,880,916
CYCLOALIPHATIC ACIDS
Daniel Frederick Dickel, Berkeley Heights, and George De Stevens, Summit, both of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Continuation-in-part of Ser. No. 858,893, Sept. 17, 1969, Pat. No. 3,786,085, which is a continuation-in-part of Ser. No. 808,341, March 18, 1969, abandoned, which is a continuation-in-part of Ser. No. 789,076, Jan. 2, 1969, abandoned, which is a continuation-in-part of Ser. No. 716,290, March 27, 1968, abandoned. This application Apr. 12, 1973, Ser. No. 350,447
Int. Cl. C07c 63/50, 63/60
U.S. Cl. 260—515 R 5 Claims

1. The α-aryl-cycloaliphatic acid having the formula



in which R_1 is hydrogen, lower alkyl or lower alkenyl, R_2 is 3 or 4 ring-membered unsubstituted cycloalkyl or cycloalkyl-lower alkyl, R_3 is unsubstituted or lower alkylated 5 to 7 ring-membered 1-cycloalkenyl, and Ph is R_4-1,4-phenylene, or (5 to 7 ring-membered 1-cycloalkenyl)-1,4-phenylene, wherein R_4 is hydrogen, lower alkyl, lower alkoxy, halogeno, trifluoromethyl or amino, or a lower alkyl ester the ammonium, an alkali metal or alkaline earth metal salt thereof.

3,880,917
2-OXO-3,4-BENZOBICYCLO-(3,3,1)-NONENE-(3) CARBOXYLIC ACIDS-8 THEREOF AND PROCESS THEREFOR

Adolf Winkler, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 9, 1973, Ser. No. 358,788

Claims priority, application Germany, May 12, 1972, 2223127

Int. Cl. C07c *63/00, 63/42*

U.S. Cl. 260—515 R **18 Claims**

1. Process for preparing 2-oxo-3,4-benzo-bicyclo-[3,3,1]-nonene-(3) and cis- and trans-2-oxo-3,4-benzo-bicyclo-[3,3,1]-nonene-(3)-carboxylic acid-8 which comprises reacting Δ^3-cyclohexene-carboxylic acid acid of Δ^4-tetrahydrophthalic acid anhydride at elevated temperature with benzene and hydrogen fluoride.

3,880,918
METHOD OF PURIFYING 3,4-DIHYDROXYPHENYLALANINE

Masashi Miyazawa; Ichiro Sasaji, both of Kawasaki; Tomoyoshi Hachiya, Kunitachi; Koji Toi, Yokohama; Teruo Uzuki, Kawasaki, and Naotake Sato, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Mar. 12, 1971, Ser. No. 123,890

Claims priority, application Japan, Mar. 17, 1970, 45-22418; Mar. 17, 1970, 45-22419; Apr. 18, 1970, 45-32686

Int. Cl. C07c *101/08*

U.S. Cl. 260—519 **11 Claims**

1. A method of purifying 3,4-dihydroxyphenylalanine of accompanying water-soluble impurities which comprises:

a. preparing an aqueous solution of the 3,4-dihydroxyphenylalanine to be purified;

b. making said solution supersaturated with respect to 3,4-dihydroxyphenylalanine;

c. holding the supersaturated solution in the liquid state at a temperature below 30°C until needle-shaped crystals of purified 3,4-dihydroxyphenylalanine are precipitated; and

d. separating the precipitated crystals from the remainder of said solution.

3,880,919
PROCESS FOR THE PRODUCTION OF ALPHA-AMINO-2-HYDROXY-PHENYLACETIC ACIDS

Hermann Oediger, Cologne, and Rudolf Braden, Odenthal-Scheuren, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

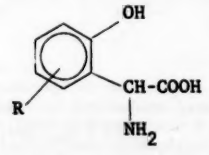
Filed Nov. 30, 1972, Ser. No. 310,792

Claims priority, application Germany, Dec. 17, 1971, 2162717

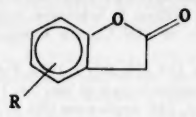
Int. Cl. C07c *101/72*

U.S. Cl. 260—519 **6 Claims**

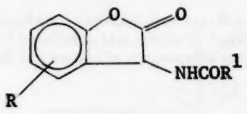
1. A process for the preparation of an α-amino-2-hydroxyphenylacetic acid of the formula:



wherein R is hydrogen, halogeno or alkyl of 1 to 4 carbon atoms, which comprises nitrosylating a 2-hydroxyphenylacetic acid lactone of the formula:



wherein R is as defined above, at a temperature of from about −10° to about 30°C. in an acidic environment with a lower alkyl ester, an alkali metal salt or the chloride of nitrous acid, to yield the corresponding coumaranedione-3-monoxime; catalytically hydrogenating said coumaranedione-3-monoxime in the presence of an alkanoic acid anhydride of the formula $R^1COOCOR^2$ in which R^1 and R^2 are independently alkyl groups of 1 to 4 carbon atoms, to yield a 3-amidocoumaran-2-one of the formula:



wherein R is as defined above; and hydrolyzing said 3-amidocoumaran-2-one with aqueous mineral acid.

3,880,920
RECOVERY OF METAL AND BROMINE CATALYSTS COMPONENTS FROM RESIDUE OF AROMATIC ACID PRODUCED BY AND RECOVERED FROM CATALYTIC LIQUID PHASE OXIDATION

Gene L. Wampfler, Lombard, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed Oct. 20, 1972, Ser. No. 299,410

Int. Cl. C07c *63/02*

U.S. Cl. 260—524 R **3 Claims**

2. In the production of iso- or terephthalic acid by the liquid phase oxidation of m- or p-xylene with molecular oxygen in the presence of acetic acid solution of components of catalysis comprising manganese and/or cobalt and a source of bromine, wherein such phthalic acid product is first separated as a solid and then acetic acid is removed from the fluid oxidation effluent leaving a residue containing said components of catalysis, at least iron as contaminant metal, and acidic and neutral organic compounds; the recovery of said components of catalysis from said residue for recycle to said oxidation by the treatment of said residue with water and lithium carbonate by the method comprising:

a. leaching said residue with water at ambient temperature to 100°C in the presence of an amount of lithium carbonate from 1 to 2 times the amount indicated by the acid number in mg KOH per gram of the residue to convert to lithium salts the acidic organic materials in said residue and with an amount of water to dissolve such lithium salts,

b. separating such aqueous solution from insolubles consisting essentially of catalyst metal carbonate, iron carbonate and the neutral organic materials content of the residue,

c. removing and collecting said neutral organic materials from said insolubles by steam distillation thereof,

d. dissolving said neutrals-free insolubles at a temperature from 50°–100°C in aqueous acetic acid containing 50–60 weight percent acetic acid in an amount thereof from 1.0–1.3 times the stoichiometric amount required to convert the metal carbonates to dissolved metal acetates,

e. heating said solution of metal acetates to remove acetic acid and obtain a solution pH of 4.5 to 5.5 whereat an insoluble form of iron precipitates,

f. separating said pH 4.5 to 5.5 solution from said precipitate and recycling said separated solution to the oxidation process,

g. incinerating to a lithium bromide-containing ash a mixture of said aqueous solution of lithium salts and said removed and collected neutral organic materials,

h. leaching said ash at ambient temperature to 100°C with water in an amount to dissolve the lithium bromide content of said ash, and

i. separating from the undissolved portion of said ash the aqueous solution of lithium bromide and recycling the separated solution to the oxidation process.

3,880,921

PROCESS FOR THE CONTINUOUS PRODUCTION OF SATURATED ALIPHATIC DICARBOXYLIC ACIDS

Gerhard Hellemanns; Hermann Rohl; Peter Hegenberg, and Werner Eversmann, all of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed Apr. 5, 1973, Ser. No. 348,124

Claims priority, application Germany, Apr. 8, 1972, 2217003

Int. Cl. C07c *51/18, 55/04*

U.S. Cl. 260—531 R 14 Claims

1. In a continuous process for the production of a saturated aliphatic dicarboxylic acid by the low temperature catalyzed nitric acid oxidation at about 20°–50°C and under a pressure of between 1 and 10 atmospheres absolute of a continuous stream of the corresponding cycloalkanol or cycloalkanone of 6 –16 carbon atoms or a mixture thereof, with a continuous stream of nitric acid to produce a stream of reactopm sludge containing solid reaction product suspended therein which is cooled and recycled and a stream of reaction gases, a portion of which is recycled, the improvement which comprises cooling the reaction sludge by passing it through the tubes of a multiple tube heat exchanger, separating the reaction gases downstream of the heat exchanger, and dispersing the recycled portion of the reaction gases in the reaction sludge upstream of the heat exchanger, in a volume amount of from 0.1 to 2.0 times the volume of the reaction sludge circulating per unit time which is sufficient to provide turbulent flow, with a pressure ratio of initial gas pressure to pressure in the circulation reactor at the gas feed point of $(x + 0.25) : x$ to $(x + 1.5) : x$, wherein x is the pressure at the gas feed point, to form a homogeneously dispersed three-phase mixture of the recycled reaction gases in the reaction sludge in the tubes of the heat exchanger.

3,880,922

PROCESS FOR PREPARING 3-FLUORO-D-ALANINE BY ASYMMETRIC REARRANGEMENT OF 2-(AZIDOCARBONYL)-3-FLUORO-PROPIONIC ESTER OR NITRILE

Donald F. Reinhold, North Plainfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 3, 1972, Ser. No. 223,292

Int. Cl. C07c *99/00*

U.S. Cl. 260—534 C 4 Claims

1. The process which comprises asymmetrically rearranging S-2-(azidocarbonyl)-3-fluoropropionic methyl ester or nitrile, said rearrangement being conducted by heating said compound to boiling in a solution of dioxane or ethanol, thereby forming the corresponding S-2-isocyanato or ethyl urethane, and heating the latter under reflux with aqueous hydrochloric acid, thereby hydrolyzing both the isocyanate and ester or nitrile groupings to produce 3-fluoro-D-alanine.

3,880,923

PRODUCTION OF ALPHA-CHLOROCARBOXYLIC ACID CHLORIDES

Walter Scheidmeir, Limburgerhof; Ulrich Bressel, and Heinz Hohenschutz, both of Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

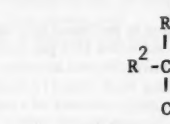
Filed Dec. 19, 1973, Ser. No. 426,372

Claims priority, application Germany, Dec. 27, 1972, 2263580

Int. Cl. C07c *53/14*

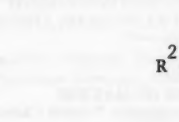
U.S. Cl. 260—544 Y 6 Claims

1. An improved process for the production of α-chlorocarboxylic acid chloride of the formula I:



(I)

in which R^1 is hydrogen or alkyl and R^2 is hydrogen or alkyl by the reaction of a carboxylic acid chloride of the formula II:



(II)

in which R^1 and R^2 have the above meanings with chlorine at a temperature of from 40° to 110°C, wherein the improvement consists in carrying out the reaction in the presence of sulfuric acid having a strength of at least 96% by weight and in an amount of 0.1 to 6% by weight of sulfuric acid, based on the amount of the carboxylic acid chloride used.

3,880,924

3-(SUBSTITUTED)-2',6'-DILOWERALKYLACRYLANILIDES

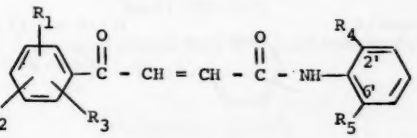
Nathaniel Grier, Englewood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 15, 1973, Ser. No. 416,131

Int. Cl. C07c *103/22*

U.S. Cl. 260—558 P 4 Claims

1. A compound of the formula:



where R_1, R_2 and R_3 are the same or different and are hydrogen or lower alkyl; and R_4 and R_5 are the same or different and are loweralkyl.

3,880,925

SEPARATION AND PURIFICATION OF CIS AND TRANS ISOMERS

Arthur W. Langer, Jr., 175 Oakwood Rd., Watchung, N.J. 07060, and Thomas A. Whitney, 812 Washington Ave., Linden, N.J. 07036

Division of Ser. No. 872,955, Oct. 31, 1969, abandoned, which is a continuation-in-part of Ser. No. 808,328, March 18, 1969, Pat. No. 3,734,693. This application Apr. 3, 1972, Ser. No. 240,870

Int. Cl. C07c *87/38*

U.S. Cl. 260—563 R 3 Claims

1. A process for separating trans-1,2-cyclohexanediamine from a mixture of cis and trans-1,2-isomers of cyclohexanediamine which comprises the steps of:

1. dissolving the mixture of isomers in methanol and treating the resultant solution with sufficient HCl gas to convert the isomers to their respective dihydrochlorides;
2. filtering the precipitate resulting from step (1) leaving behind a methanol filtrate containing a mixture of a major amount of the cis-1,2-isomer dihydrochloride and a minor amount of the trans-1,2-isomer dihydrochloride and a minor amount of the trans-1,2-isomer dihydrochloride; 3. neutralizing the precipitate from step (2), and recovering trans-1,2-cyclohexanediamine of at least 95% purity.

3,880,926

NEW COMPOSITIONS OF MATTER

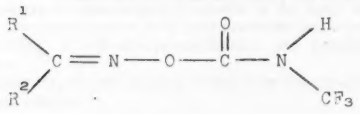
Sidney B. Richter, Chicago, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed July 17, 1968, Ser. No. 745,405

Int. Cl. C07c *131/00*

U.S. Cl. 260—566 AC 4 Claims

1. A compound of the formula



wherein R^1 is selected from the group consisting of alkyl, haloalkyl, alkoxyalkyl, alkylthioalkyl, and dialkylaminoalkyl wherein each substituent contains a maximum of ten carbon atoms and R^2 is selected from the group consisting of hydrogen and R^1.

3,880,927

β-PHENYL-β,β-DIFLUOROETHYLAMINES

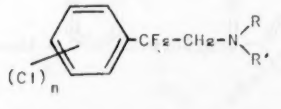
Bryan B. Molloy, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed June 19, 1972, Ser. No. 263,908

Int. Cl. C07c *87/28*

U.S. Cl. 260—570.5 R 6 Claims

1. Compound of the formula



wherein R is hydrogen, C_1–C_3 alkyl or cyclopropyl; R′ is hydrogen or C_1–C_3 alkyl; and n is 0–2, and acid addition salts thereof formed with pharmaceutically-acceptable, non-toxic acids.

3,880,928

CATALYTIC HYDROGENATION OF UNSATURATED DINITRILES EMPLOYING RHODIUM AS CATALYTIC AGENT

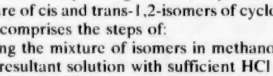
Charles A. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 19, 1973, Ser. No. 416,787

Int. Cl. C07c *87/14*

U.S. Cl. 260—583 P 15 Claims

1. A process for the catalytic hydrogenation of an unsaturated dinitrile feedstock containing at least one unsaturated dinitrile compound of the formula:



wherein each R is independently selected from the group consisting of an alkylene radical and an alkylidene radical, R′ is an alkyl radical, and the number of carbon atoms in said compound is in the range of 7 to 30; which comprises contacting said feedstock under suitable hydrogenation conditions with ammonia; hydrogen; at least one diluent selected from the group consisting of unsubstituted alkanols having from 2 to 12 carbon atoms, alkanes and cycloalkanes having from 4 to 12 carbon atoms, and unsubstituted acyclic and unsubstituted cyclic ethers having from 4 to 12 carbon atoms; and the catalyst consisting essentially of a catalytic component selected from the group consisting of elemental rhodium, rhodium compounds which are reducible by hydrogen to elemental rhodium under said hydrogenation conditions, and mixtures thereof, to thereby effect the at least substantially complete hydrogenation of said at least one unsaturated dinitrile compound to the corresponding branched-chain saturated aliphatic diamine.

3,880,929

CATALYTIC HYDROGENATION OF UNSATURATED DINITRILES

Charles A. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 19, 1973, Ser. No. 416,782

Int. Cl. C07c *87/14*

U.S. Cl. 260—583 P 18 Claims

1. A process for the catalytic hydrogenation of an unsaturated dinitrile feedstock containing at least one unsaturated dinitrile compound of the formula:

wherein each R is independently selected from the group consisting of an alkylene radical and an alkylidene radical, R′ is an alkyl radical, and the number of carbon atoms in said compound is in the range of seven to 30; which comprises contacting under suitable hydrogenation conditions said feedstock with ammonia; hydrogen, a diluent comprising at least 25 volume percent methanol; and the catalyst consisting essentially of a first catalyst component selected from the group consisting of elemental ruthenium, elemental palladium, ruthenium compounds which are reducible by hydrogen to elemental ruthenium at said hydrogenation conditions, palladium compounds which are reducible by hydrogen to elemental palladium at said hydrogenation conditions, and mixtures thereof, and a second catalyst component selected from the group consisting of elemental nickel, elemental cobalt, nickel compounds which are reducible by hydrogen to elemental nickel at said hydrogenation conditions, cobalt compounds which are reducible by hydrogen of elemental cobalt at said hydrogenation conditions, and mixtures thereof; to thereby effect the at least substantially complete hydrogenation of said

at least one unsaturated dinitrile compound to the corresponding branched-chain saturated aliphatic diamine; the weight ratio of the total metal of said first catalyst component to the total metal of said second catalyst component being in the range of about 0.01:1 to about 1:1.

3,880,930

PROCESS FOR THE PRODUCTION OF 1-[CYCLOHEXENE-(1-YL)]-CYCLOHEXANONE-(2) BY CONDENSATION OF CYCLOHEXANONE

Klaus Ramm, Waltrop; Wilfried Thielecke; Maximilian Zander, both of Castrop-Rauxel; Gerd Collin, Suisburg-Meiderich, and Karl Ruhl, Castrop-Rauxel, all of Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt am Main, Germany

Filed May 24, 1973, Ser. No. 363,437

Claims priority, application Germany, May 29, 1972, 22260168

Int. Cl.[2] C07C *45/00*

U.S. Cl. 260—586 C **15 Claims**

1. In a process for the preparation of 1-[cyclohexene-(1-yl)]-cyclohexanone-(2) by the condensation of cyclohexanone in the presence of a catalyst having high acidity and at an elevated temperature under reflux while removing by distillation water formed during said heating step, the improvement wherein said process comprises heating to boiling at a pressure of about 60 – 200 torr cyclohexanone and at least one catalyst selected from the group consisting of sulfonic acid cation exchange resins, benzene sulfonic acid and toluene sulfonic acid.

3,880,931

NOVEL NOREREMOPHILANE DERIVATIVES

Giuliano Bozzato, Kusnacht; Mario Pesaro, Zurich; Peter Schudel, Grut near Wetzikon; Marianne Hug-Inderbitzin, Schwerzenbach, all of Switzerland, and Robert Edward Erickson, Westfield, N.J., assignors to Givaudan Corporation, Clifton, N.J.

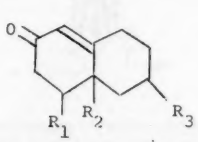
Division of Ser. No. 111,736, Feb. 1, 1971, Pat. No. 3,819,711. This application Sept. 21, 1973, Ser. No. 399,595

Claims priority, application Switzerland, Feb. 19, 1970, 2394/70

Int. Cl. C07c *49/54*

U.S. Cl. 260—586 F **4 Claims**

1. A compound of the general formula



wherein R_1 and R_2 signify hydrogen or methyl, but at least one of the symbols R_1 and R_2 signifies hydrogen, and R_3 is isopropyl, isopropenyl or isopropylidene.

3,880,932

4-(2-NAPHTHYL)-4-ALKYL-3-BUTEN-2-ONES

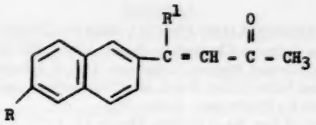
Paul L. Anderson, Dover, N.J., and Darryl A. Brittain, New York, N.Y., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Filed Aug. 20, 1973, Ser. No. 390,033

Int. Cl. C07c *49/76, 49/80, 49/82*

U.S. Cl. 260—590 **5 Claims**

1. A compound of the formula



wherein

R is a hydrogen atom, halo having an atomic weight of from about 19 to 80, difluoromethoxy, alkyl having from one to four carbon atoms, alkoxy having from one to four carbon atoms, or alkylthio having from one to four carbon atoms; and

R^1 is alkyl having from 1 to 3 carbon atoms.

3,880,933

HYDROGENATION OF CARBON DISULFIDE TO METHYL MERCAPTAN IN PRESENCE OF HYDROGEN SULFIDE

Donald H. Kubicek, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 2, 1973, Ser. No. 356,414

Int. Cl. C07c *149/06*

U.S. Cl. 260—609 R **3 Claims**

1. A process for the conversion of carbon disulfide to methyl mercaptan and unavoidably to dimethyl sulfide which comprises hydrogenating carbon disulfide in the presence of hydrogen and a sulfactive hydrogenation catalyst and hydrogen sulfide added in an amount with respect to the carbon disulfide effective to permit substantially over a broad range an increase in space velocity with concomitant increase in conversion of carbon disulfide to methyl mercaptan at the expense of dimethyl sulfide wherein the mol ratio of H_2S to CS_2 is in the approximate range of from about 0.5/1 to about 20/1, the mol ratio of hydrogen to carbon disulfide is in the approximate range of from about 0.1/1 to about 10/1, the pressure is in the approximate range from about atmospheric to about 1,000 psig, the temperature is in the approximate range of from about 300° to about 650°F, and the space velocity is in the approximate range of from about 100 to about 5,000 expressed as gaseous volumes of reactants per volume of catalyst per hour.

3,880,934

NITROPHENYLOXY-BUTANEDIOLS

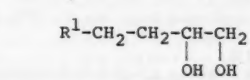
David H. Rammler, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Feb. 10, 1972, Ser. No. 225,342

Int. Cl. C07c *43/20*

U.S. Cl. 260—613 D **3 Claims**

1. A compound selected from those represented by the following formula:



where R^1 is 4-nitrophenyloxy or 2,4-dinitrophenyloxy.

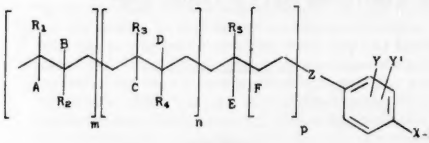
3,880,935

ALKYNYLOXY-PHENYL DERIVATIVES

Madhukar Subraya Chodnekar, Basel; Albert Pfiffner, Pfaffhausen; Norbert Rigassi, Arlesheim; Ulrich Schwieter, Reinach, and Milos Suchy, Basel, all of Switzerland, assignors to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 123,060, March 10, 1971, Pat. No. 3,718,686. This application Dec. 4, 1972, Ser. No. 312,074
Claims priority, application Switzerland, Mar. 25, 1970, 4621/70
Int. Cl. C07c *43/22*
U.S. Cl. 260—613 D 15 Claims

1. A compound of the formula:



wherein R_1, R_3 and R_5 are methyl or ethyl; R_2 and R_4 are hydrogen or methyl; R_6 is propargyl A, B, C, D, E and F are individually hydrogen or A and B taken together form a carbon to carbon bond C and D taken together form a carbon to carbon bond, and E and F taken together form a carbon to carbon bond; Z is oxygen Y and Y' are hydrogen, halogen, lower alkyl or lower alkoxy; X is oxygen or $-CH_2O-$; and m, n and p are intergers of from 0 to 1, with at least one of m, n and p being 1; with the proviso that when m and n are O, E and F are individually hydrogen, or taken together form a carbon to carbon bond.

3,880,936

NOVEL PROCESS FOR THE PRODUCTION OF METHYLOL

John O. Turner, West Chester, Pa., assignor to Sun Research and Development Co., Marcus Hook, Pa.

Division of Ser. No. 126,934, March 22, 1971, Pat. No. 3,758,610. This application Apr. 27, 1973, Ser. No. 355,123
Int. Cl. C07c *43/30*
U.S. Cl. 260—615 A 3 Claims

1. A process for the production of methylal and t-butyl alcohol which comprises reacting t-butylhydroperoxide with methanol in the presence of an acid catalyst selected from the group consisting of mineral acids and acid treated molecular sieves at a temperature of from about 20° to 80° C, wherein the methanol is present in a 2-to-12 fold molar excess, based on the moles of hydroperoxide, and the acid catalyst is present in not more than a four weight percent concentration based on the total weight of the acid-methanol mixture.

3,880,937

PROCESS FOR PREPARING 3-ALKYL-5-T-BUTYLPHENOLS

Katsuzo Kamoshita, Toyonaka, and Shinji Nakai, Takarazuka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka-shi, Japan

Filed Apr. 13, 1971, Ser. No. 133,754
Claims priority, application Japan, Apr. 15, 1970, 45-32558
Int. Cl. C07c *39/06*
U.S. Cl. 260—624 E 4 Claims

1. A process for preparing a 3-alkyl-5-t-butylphenol which comprises contacting a 3-alkyl-6-t-butylphenol with aluminum chloride at a temperature between about 0° and 30°C to rearrange the t-butyl group at the 6-position to the 5-position, the alkyl group having 1 to 3 carbon atoms.

3,880,938

HYDROFORMYLATION USING AGED ZEOLITE-ALUMINA HYDROSOL DISPERSION

Stephen N. Massie, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Sept. 10, 1973, Ser. No. 396,289
Int. Cl. C07c *29/00*
U.S. Cl. 260—632 HF 11 Claims

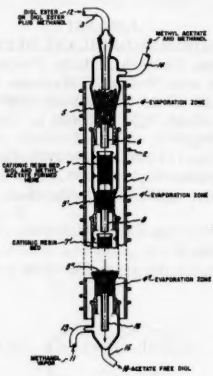
1. A process for the hydroformylation of an olefinic hydrocarbon of at least four carbon atoms which comprises reacting said olefinic hydrocarbon with hydrogen and carbon monoxide at a temperature of from about 75°C to about 300°C and a pressure of from about atmospheric to about 500 atmospheres in the presence of a cobalt catalyst and a zeolite-alumina hydrosol dispersion which has been aged at a temperature of from about 30°C to about 500°C, and recovering the resultant hydroformylated product.

3,880,939

CONTINUOUS PROCESS FOR THE PRODUCTION OF A DIOL FROM A DIOL ESTER

John E. Corn, Schenectady; Jimmy L. Webb, Ballston Lake, and R. Thomas Swiger, Schenectady, all of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed May 30, 1973, Ser. No. 365,239
Int. Cl. C07c *27/00*, *31/20*
U.S. Cl. 260—635 R 8 Claims



1. A continuous process for the production of an ester-free diol from a diol ester by alcoholysis in the presence of an acidic ion exchange material which comprises continually feeding the diol ester comprising a butanediol acetate and a lower alkanol vapor into a reactor, passing said feed materials countercurrently in the reactor, contacting the diol ester and alkanol vapor in the reactor, then flowing a mixture of the diol ester and alkanol through an acidic cationic exchange material in a reaction zone at elevated temperature, then contacting this reaction mixture with additional alkanol vapor thereby removing an ester whose boiling point is lower than the diol ester, then flowing the mixture through an acidic ion exchange material in a reaction zone, repeating the steps of contacting the reaction mixture with additional alkanol vapor and flowing the mixture through an acidic cationic exchange material and then continually removing the ester-free diol and a mixture of starting alkanol and an ester whose boiling point is lower than that of the diol ester from the tower; the amount of alkanol

used being about 1 mole to about 25 moles per mole of diol ester.

3,880,940

MANUFACTURE OF ALIPHATIC ALCOHOLS

Karl Baer, Weinheim; Heinrich Elliehausen, Ludwigshafen; Heinz Hohenschutz, Mannheim; Max Strohmeyer, Limburgerhof, and Guenter Zirker, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Nov. 21, 1973, Ser. No. 418,070

Claims priority, application Germany, Nov. 24, 1972, 2257673

Int. Cl. C07c *29/14*

U.S. Cl. 260—639 HF **9 Claims**

1. In a process for the manufacture of a saturated aliphatic alcohol of 2 to 20 carbon atoms by hydrogenation of an alkanal of 2 to 20 carbon atoms at a temperature of from 140° to 230°C at a pressure of from 50 to 350 atmospheres in the presence of a catalyst containing from 5 to 15% by weight nickel and from 5 to 20% by weight molybdenum, based on the weight of metal plus support, supported on silicic acid, the improvement which comprises using as catalyst a product which has been obtained by heating a silicic acid carrier material to a temperature of from 700° to 1200°C, impregnating the resulting silicic acid carrier material with nickel and molybdenum salts, drying the product, further heating it to a temperature of from 200° to 500°C and subsequently treating the product with hydrogen at elevated temperature.

3,880,941

METHOD IN THE RECOVERY OF TRINITRO-METHANE(NITROFORM) FROM A MIXTURE OF TRINITROMETHANE, NITRIC ACID AND WATER

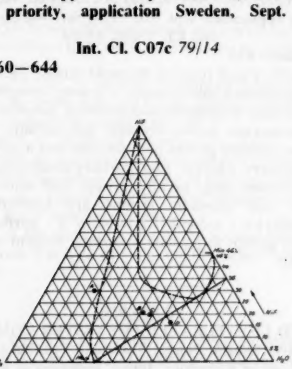
Carl August Ragnar Davegårdh, Nora, and Gustav Allan Wetterholm, Gyttorp, both of Sweden, assignors to Nirto Nobel AB, Gyttorp, Sweden

Continuation-in-part of Ser. No. 341,075, Dec. 11, 1972, abandoned. This application Apr. 30, 1973, Ser. No. 356,991

Claims priority, application Sweden, Sept. 5, 1972, 11446/72

Int. Cl. C07c *79/14*

U.S. Cl. 260—644 **2 Claims**



1. In the method for recovering trinitromethane in the form of an aqueous solution from a solution containing nitric acid, water and trinitromethane, the content of nitric acid of said solution being lower than that corresponding to the content of nitric acid in an azeotropic mixture of nitric acid, water and trinitromethane, by adding water to said solution and then distilling, the improvement which comprises adding water to such an extent that a boundary line represented by a straight line connecting the points of the compositions 67 % nitric acid, 33% water resp. 35% trinitromethane, 65% water in the ternary diagram nitric acid/water/trinitromethane is reached or crossed.

3,880,942

SURFACE CRYSTALLIZATION PROCESS

Delmar O. Hug, Edwardsville, and Taniel A. Garabedian, Belleville, both of Ill., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 150,719, June 7, 1971, abandoned. This application June 7, 1973, Ser. No. 368,005

Int. Cl. C07c *79/12*

U.S. Cl. 260—646 **2 Claims**

1. In a process for separating the isomers of nitro- and halo-substituted aromatic compounds in a liquid isomeric mixture by surface crystallization from the melt, wherein the isomeric mixture is cooled until crystals form on a cooling surface, the improvement comprising conducting the surface crystallization on a cooling surface of polytetrafluoroethylene.

3,880,943

HIGHLY FLUORINATED ORGANIC COMPOUNDS AND SYNTHESIS OF PERFLUOROSTYRENE

Leo A. Wall, McLean, Va., and Joseph M. Antonucci, Hyattsville, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 301,681, Aug. 12, 1963, Pat. No. 3,513,206. This application Jan. 13, 1970, Ser. No. 2,657

Int. Cl. C07c *25/28*

U.S. Cl. 260—651 F **2 Claims**

1. (1,2,2,2-tetrafluoroethyl) perfluorobenzene.

2. A method of making perfluorostyrene and α-hydroheptafluorostyrene which comprises pyrolyzing (1,2,2,2-tetrafluoroethyl) perfluorobenzene at a temperature from 500°C to 900°C.

3,880,944

FRIEDEL-CRAFTS REACTION WITH GRAPHITE INTERCALATED LEWIS ACIDS

Jean-Marc Lalancette, Sherbrooke, Quebec, Canada, assignor to Ventron Corporation, Beverly, Mass.

Filed Nov. 13, 1973, Ser. No. 415,391

Int. Cl. C07c *3/56*

U.S. Cl. 260—671 C **6 Claims**

1. In a process for the synthesis of substituted aromatic hydrocarbon by the reaction of an unsaturated aliphatic hydrocarbon or a halogenated aliphatic hydrocarbon with an aromatic hydrocarbon, the improvement which comprises carrying out the reaction in the presence of a graphite intercalated Lewis acid selected from the group consisting of aluminum chloride, aluminum tribromide and ferric chloride thereby to yield a reaction mixture containing a higher percentage of mono and disubstituted aromatic hydrocarbon than is obtained when using the Lewis acid alone.

3,880,945

PARAFFIN ISOMERIZATION IN SUPERCRITICAL FLUIDS

George M. Kramer, Berkeley Heights, and Frederic Leder, Elizabeth, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 207,603, Dec. 13, 1971, abandoned, which is a continuation-in-part of Ser. No. 23,002, March 26, 1970, abandoned. This application July 18, 1973, Ser. No. 380,093

Int. Cl. C07c *5/28*

U.S. Cl. 260—683.75 **16 Claims**

1. An improved process for isomerizing hydrocarbons comprising a paraffin containing from four to 12 carbon atoms, said process comprises subjecting said paraffin to the action of a Lewis acid catalyst and a solvent selected from the group consisting of CO_2, HBr and HCl at a temperature above the critical temperature of the mixture of said paraffin and said solvent, said temperature being in the range of 0° to 180°C, and at a pressure sufficient to impart to said mixture a density

of at least one-tenth that of said solvent liquid, saturated at 20°C, said pressure ranging from 1,000 to 5,000 psig.

3. The process of claim 2 wherein said Lewis acid catalyst further comprises a promoter selected from the group consisting of water, hydrogen bromide, hydrogen chloride, and hydrogen fluoride or mixtures thereof and wherein said solvent is CO_2.

3,880,946

POWDER PAINT COMPOSITIONS INCLUDING CARBOXYL TERMINATED POLYETHER CROSSLINKING AGENT

Santokh S. Labana, Dearborn Heights, and Yun-Feng Chang, Plymouth, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 18, 1973, Ser. No. 425,744
Int. Cl. C08g *45/04, 45/06*
U.S. Cl. 260—830 R **18 Claims**

1. A powder coating composition which, exclusive of pigments and other non-reactive components, comprises a coreactable mixture of:

A. a copolymer of about 8 to about 30 weight percent of a glycidyl ester of a monoethylenically unsaturated acid and about 92 to about 70 weight percent of other monoethylenically unsaturated monomers, said copolymer having a glass transition temperature in the range of 40°C to 90°C and a molecular weight (M_n) in the range of 2500 to 8500;

B. a carboxyl terminated polyether in the amount of between about 0.8 and about 1.2 carboxyl groups for each epoxy group in the copolymer; and

C. from about 0.05 weight percent to about 4.0 weight percent based on the total weight of the total coating composition of a polymeric flow control agent.

3,880,947

POWDER COATING COMPOSITIONS INCLUDING CARBOXYL TERMINATED POLYAMIDE CROSSLINKING AGENTS

Santokh S. Labana, Dearborn Heights, and Yun-Feng Chang, Plymouth, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 18, 1973, Ser. No. 425,741
Int. Cl. C08g *45/12, 45/05*
U.S. Cl. 260—830 P **21 Claims**

1. A powder coating composition which, exclusive of pigments and other non-reactive components, comprises a coreactable mixture of:

A. a copolymer of about 8 to about 30 weight percent of a glycidyl ester of a monoethylenically unsaturated acid and about 92 to about 70 weight percent of other monoethylenically unsaturated monomers, said copolymer having a glass transition temperature in the range of 40°C to 90°C and a molecular weight (M_n) in the range of 2500 to 8500;

B. a carboxyl terminated polyamide in the amount of between about 0.8 and about 1.2 carboxyl groups for each epoxy group in the copolymer; and

C. from about 0.05 weight percent to about 4.0 weight percent based on the total weight of the total coating composition of a polymeric flow control agent.

3,880,948

RUBBER REINFORCED POLYAMIDES

Alfred J. Chompff, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 306,463, Nov. 14, 1972, abandoned. This application Oct. 25, 1973, Ser. No. 409,519
Int. Cl. C08g *45/14, 45/12, 45/04*
U.S. Cl. 260—835 **24 Claims**

1. A thermoplastic material which exclusive of particulate filler consists essentially of

I. about 100 parts by weight of a continuous phase of a nylon having repeating carbonamide groups as an integral part of the polymeric chain, and

II. about 6 to 70 parts by weight of a dispersed phase of crosslinked elastomer

A. consisting essentially of carbon, hydrogen and oxygen,

B. having epoxy and hydroxy functional groups prior to dispersion within said continuous phase,

C. formed by reacting

1. a diepoxide

a. consisting essentially of carbon hydrogen and oxygen, and

b. having average molecular weight in the range of about 200 to about 1000 with

2. a carboxyl bearing polymer

a. consisting essentially of carbon, hydrogen and oxygen,

b. having average molecular weight in the range of about 1500 to about 10,000,

c. having an average of about 1.5 to about 4.0 carboxyl groups per molecule, and

d. being selected from the group consisting of carboxy terminated polyesters and polymers formed from polymerization of ethylenically unsaturated monomers, the relative concentrations of the diepoxide and the polymer being controlled to provide epoxy/carboxy group ratios in the range of about 1.0 to 1.0 to about 6.0 to 1.0,

at a temperature in the range of about 50° to about 170°C, said elastomer being chemically bonded to said nylon at interfaces between said continuous phase and said dispersed phase by reacting said epoxy and hydroxy functional groups on said elastomer with amide groups on said nylon at a temperature in the range of about 170°C to about 350°C.

3,880,949

INHERENTLY MOLD-RELEASABLE MOLD OR CASTING COMPOSITION

Jose L. Villa, Heightstown, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Division of Ser. No. 356,976, May 3, 1973, Pat. No. 3,838,110. This application Sept. 10, 1974, Ser. No. 504,782
Int. Cl. C08G *45/14*
U.S. Cl. 260—835 **11 Claims**

1. A mold, which requires no mold release agent, in which at least the surface that contacts a casting composition comprises a cured fluorocarbon-containing polyester prepared from polyepoxides having epoxide functionality of approximately two epoxide groups per molecule and a carboxy terminated polymer; wherein said carboxy-terminated polymers contain pendant vinyl or allyl groups and wherein at least some of said pendant groups are converted to 2-perfluoroalkyl-1 - iodoethyl groups or 3 - perfluoroalkyl-2-iodopropyl groups to provide a fluorine content of from 1 to 40 percent.

3,880,950

UNCURED UNSATURATED POLYESTER COMPOSITION

Kazuo Hara; Satoshi Bando; Toshihiko Yoshitake, and Takeo Tasaka, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Okayama Prefecture, Japan

Filed May 11, 1973, Ser. No. 359,426
Claims priority, application Japan, May 15, 1972, 47-48386; May 15, 1972, 47-48387
Int. Cl. C08f *43/08, 43/02*
U.S. Cl. 260—862 **5 Claims**

1. An uncured unsaturated polyester resin composition useful in the production of molded articles of cured unsaturated polyester resins, the composition comprising

1. 60 to 97 % by weight of an uncured unsaturated polyester resin which is a liquid mixture of at least one unsaturated polyester selected from the group consisting of the unsaturated polyesters from unsaturated dibasic carboxylic

acid and the anhydride and dimethylesters thereof, ethylene oxide, propylene oxide or from said unsaturated dibasic carboxylic acid together with saturated dicarboxylic acid and said diol and at least one vinyl monomer for curing the polyester, and

2. 40 to 3 % by weight of a modifying polymer of the microgel structure which is obtained by polymerizing, 97 to 30 % by weight of at least one vinyl monomer in the presence of 3 to 70 % by weight of at least one rubbery polymer having carbon to carbon double bonds in the molecule, is finely dispersible, without dissolving, in both of said unsaturated polyester resin and said unsaturated monomer for curing the polyester, and contains 0.1 to 10 % by weight of carboxyl groups in the molecule.

3,880,951

COPOLYMER AND GRAFT BLEND EACH CONTAINING ACRYLONITRILE AND ACRYLATE COMPONENTS

Masaki Ooya; Masayasu Suzuki, and Akio Kobayashi, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Mar. 17, 1972, Ser. No. 235,862

Claims priority, application Japan, Mar. 18, 1971, 46-15426; Dec. 10, 1971, 46-99489

Int. Cl. C08f *15/38*

U.S. Cl. 260—876 R **4 Claims**

1. A synthetic resin composition of low gas permeability, consisting essentially of a blend of a first resin component and a second resin component, wherein the first resin component is a copolymer consisting essentially of

1. 50 to 85% by weight of a monomer selected from the group consisting of acrylonitrile and methacrylonitrile, and
2. 15 to 50% by weight of an acrylic ester represented by the formula $CH_2 = CHCOOR_1$ wherein R_1 is alkyl of 1 to 4 carbon atoms, and

the second resin component is a graft copolymer consisting essentially of 90 to 25 parts by weight of a monomer mixture consisting essentially of

1. 40 to 85% by weight of a monomer selected from the group consisting of acrylonitrile and methacrylonitrile, and
2. 60 to 15% by weight of an acrylic ester represented by the formula $CH_2 = CHCOOR_1$ wherein R_1 is alkyl of 1 to 4 carbon atoms

grafted upon 10 to 75 parts by weight of a polymeric substance to be the trunk polymer for the graft copolymer, which polymeric substance is a copolymer of

3. 50 to 90% by weight of 1,3-butadiene, and
4. 10 to 50% by weight of at least one vinyl monomer selected from the group consisting of styrene, methyl methacrylate and esters of acrylic acid wherein the alcohol radical has 1–8 carbon atoms,

the content of the trunk polymer in the second resin component being from 5 to 20% by weight of the entire blended resin composition.

3,880,952

PHOTODEGRADABLE POLYETHYLENE COMPOSITION CONTAINING POLY(4-METHYLPENTENE) AND A PHOTOSENSITIZER

Derek Samuel Brackman, Stanmore, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 26, 1972, Ser. No. 257,142

Claims priority, application United Kingdom, June 10, 1971, 19890/71

Int. Cl. C08f *45/66*

U.S. Cl. 260—878 R **9 Claims**

1. A photodegradable polyethylene composition which contains 0.01 to 2% by weight of poly(4-methylpentene-1) and 0.001% to 2% by weight of a photosensitiser selected from the group consisting of aromatic ketones and compounds of transition metals.

3,880,953

ADHESIVE COMPOSITION

Raymond E. Downey, Copley, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 430,341, Jan. 2, 1974, abandoned, which is a continuation of Ser. No. 323,561, Jan. 15, 1973, abandoned, which is a continuation of Ser. No. 169,853, Aug. 6, 1971, abandoned, which is a continuation of Ser. No. 807,975, March 17, 1969, abandoned. This application Sept. 5, 1974, Ser. No. 503,228

Int. Cl. C08f *19/08;* **C09j** *7/04*

U.S. Cl. 260—876 B **3 Claims**

1. A pressure sensitive adhesive composition which consists essentially of a mixture of

a. an unvulcanized elastomeric block copolymer of styrene and isoprene having an intrinsic viscosity of about 0.6 to about 1.5 as determined by 0.5 gram in 50 milliliters of toluene solution at 30°C and having the general configuration A - B - A wherein each A is an independently selected non-elastomeric styrene polymer block having an average molecular weight of about 5,000 to about 30,000 and a glass transition temperature above about 25°C, the total block A content being from about 10 to about 50 percent by weight of the copolymer, and B is an elastomeric 1,4 addition polymer block of isoprene having an average molecular weight from about 50,000 to about 150,000, a tensile strength at 25°C in excess of 200 pounds per square inch, and a glass transition temperature below about 10°C, the difference between the glass transition temperatures of the A and B blocks being at least 40°C, and

(b) from about 30 to about 250 weight percent based on the block copolymer of a compatible, thermoplastic tackifying resin containing carbon-to-carbon unsaturation therein, comprising from about 20 to about 80 percent units derived from piperylene and correspondingly about 80 to about 20 percent units derived from 2-methyl-2-butene, having a softening point of about 80° to about 110°C, having an iodine number of from about 40 to about 140 according to ASTM D 1959-61, derived from polymerizing with aluminum chloride a mixture comprising piperylene and 2-methyl-2-butene in a mole ratio of about 20:75 to about 75:20, and having a maximum of about 5 weight percent of an aromatic component.

3,880,954

METHOXY SILANE COUPLING OF BLOCK COPOLYMER FORMED IN CYCLOHEXANE

Gerald R. Kahle, Brussels, Belgium; Alonzo G. Kitchen, and Carl A. Uraneck, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 22, 1973, Ser. No. 390,405

Int. Cl. C08d *5/04*

U.S. Cl. 260—879 **7 Claims**

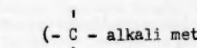
1. In a process for preparing a coupled copolymer of a monovinyl-substituted aromatic hydrocarbon monomer having 8–18 carbon atoms per molecule and a conjugated diene having 4–12 carbon atoms per molecule wherein said monovinyl-substituted aromatic hydrocarbon monomer is contacted with an organo-lithium initiator in cyclohexane solvent in a reaction zone and thereafter said conjugated diene is introduced and polymerization continued, the improvement comprising: thereafter adding a silane having at least two methoxy groups to form said coupled copolymer; thereafter contacting said coupled copolymer with water; thereafter separating methyl alcohol thus produced from said cyclohexane and recycling said cyclohexane to said reaction zone; and recovering said coupled copolymer.

3,880,955
LACTONE-CONTAINING POLYMERS

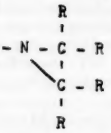
Henry L. Hsieh, and Ollie G. Buck, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 147,709, May 27, 1971, abandoned. This application Apr. 16, 1973, Ser. No. 351,436
Int. Cl. C08d 9/08; C08f 29/12
U.S. Cl. 260—887 **10 Claims**

1. In a method of making a block copolymer by reacting a lactone monomer with a base polymer which is a polymer of a conjugated diene or a copolymer thereof with a vinyl aromatic compound, said base polymer having at least one



group; the improvement which comprises contacting a polyaziridinyl compound under reaction conditions with either (1) the base polymer and the lactone monomer being reacted or (2) the copolymer formed by reacting the base polymer with the lactone monomer, said polyaziridinyl compound having at least two



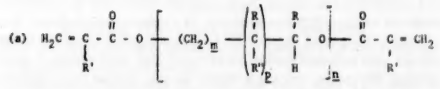
groups per molecule, wherein R is hydrogen, alkyl, aryl, cycloalkyl or a composite thereof, the total carbon atoms in said R groups being not greater than about 20.

3,880,956
ADHESIVE AND SEALANT COMPOSITIONS

Martin M. Skoultchi, Somerset, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

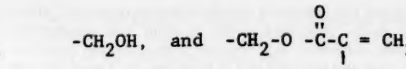
Filed Oct. 29, 1973, Ser. No. 410,912
Int. Cl. C08f 3/64, 3/66
U.S. Cl. 260—89.5 R **22 Claims**

1. An anaerobic curing composition stable when exposed to air comprising a non-aqueous mixture of a polymerizable acrylic or substituted acrylic monomer selected from the group consisting of

(a) 

wherein

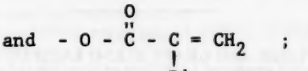
R is selected from the group consisting of hydrogen, methyl, ethyl,



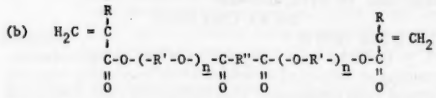
R′ is selected from the group consisting of hydrogen, chlorine, methyl and ethyl;

R″ is selected from the group consisting of hydrogen, hydroxy,

and



m is an integer 1 to 8; and *n* is an integer from 1 to 20; and *p* is 0 or 1;

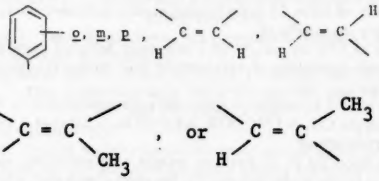
(b) 

wherein

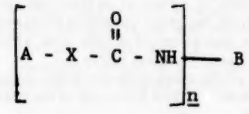
R represents hydrogen, chlorine, methyl or ethyl

R′ represents alkylene with 2–6 carbon atoms,

R″ represents $(CH_2)_m$ in which *m* is an integer of from 0 to 8,



n represents an integer of from 1 to 4;

(c) 

wherein X is selected from the group consisting of —O— and

and R is a member selected from the group consisting of hydrogen and lower alkyl of 1 to 7 carbon atoms, A represents the organic residue of an active hydrogen containing acrylic ester wherein the active hydrogen has been removed, said ester being hydroxy or amino substituted on the alkyl portion thereof, and the methyl, ethyl and chlorine homologs thereof, *n* is an integer from 1 to 6, and B is a mono- or polyvalent organic radical selected from the group consisting of alkyl, alkylene, alkenyl, cycloalkyl, cycloalkylene, aryl, aralkyl, alkaryl, poly(oxyalkylene), poly(carboalkoxyalkylene), and heterocyclic

radicals both substituted and unsubstituted; and

d. monofunctional acrylate and methacrylate esters and the hydroxy, amide, cyano, chloro, and silane substituted derivatives thereof; and from about 0.01 to 10% by weight of the monomer of diazonium salt sufficient to initiate polymerization of said acrylic monomer at room temperature in the absence of air or oxygen and on contact with an active metal surface.

3,880,957

GRAFT COPOLYMERS OF VINYLIDENE MONOMERS ONTO TRIHALOMETHYL HYDROCARBON GLYCIDYL ETHER POLYMERS

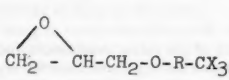
Harold A. Tucker, Shaker Heights, and Richard V. Kemp, Akron, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 350,326, April 12, 1973, Pat. No. 3,833,522, which is a division of Ser. No. 163,991, July 19, 1971, abandoned. This application June 3, 1974, Ser. No. 475,408

Int. Cl. C08f *39/00, 29/12, 29/30*

U.S. Cl. 260—901 **7 Claims**

1. A graft polymer consisting of a polyether polymer containing interpolymerized units of a trihalomethyl hydrocarbon glycidyl ether of the formula



wherein X is a halogen selected from the group consisting of chlorine, bromine, and iodine, and R is a hydrocarbon group selected from the group consisting of alkyl radicals containing one to 12 carbon atoms, cycloalkyl radicals containing five to eight carbon atoms in the ring, and aryl, aralkyl, and alkaryl radicals containing six to 12 carbon atoms, having grafted thereon at least one vinylidene monomer, said graft being catalyzed by a metal carbonyl complex to produce grafting of said vinylidene monomer onto the trihalomethyl site of said polymer.

3,880,958

N-(N'SUBSTITUTED-AMINOMETHYLIDENE)-O,S-DIALKYLTHIOL-PHOSPHORIC ACID DIESTER-IMIDES

Hellmut Hoffmann, Wuppertal, and Ingeborg Hammann, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

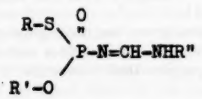
Filed Mar. 5, 1973, Ser. No. 338,010

Claims priority, application Germany, Mar. 9, 1972, 2211338

Int. Cl. C07f *9/24;* **A01n** *9/36*

U.S. Cl. 260—944 **7 Claims**

1. A N-(aminomethylidene)-thiol-phosphoric acid ester imide of the formula



in which

R and R' each independently is lower alkyl, and

R'' is alkyl or alkenyl with up to 6 carbon atoms, cycloalkyl with 4 to 6 carbon atoms.

3,880,959

O-ALKYL-S-SUBSTITUTED-O-NAPTHYLPHOSPHOROTHIOLATES

Shigeo Kishino; Yasuo Yamada, both of Tokyo; Akio Kudamtsu, Kanagawa-ken; Yoshio Kurahashi, Tokyo; Shoozo Sumi, Tokyo; Morisuke Seki, Tokyo, and Koozo Shiokawa, Kanagawa-ken, all of Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

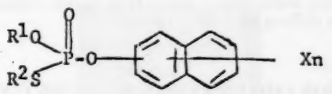
Division of Ser. No. 80,762, Oct. 14, 1970, Pat. No. 3,798,293. This application Nov. 29, 1973, Ser. No. 420,244

Claims priority, application Japan, Oct. 21, 1969, 44-83602

Int. Cl. C07f *9/16;* **A01n** *9/36*

U.S. Cl. 260—950 **7 Claims**

1. A naphthylphosphorothiolate of the formula



in which

R^1 is lower alkyl,

R^2 is lower alkenyl or lower alkoxyethyl,

X is halogen, and

n is zero, 1 or 2.

3,880,960

O-PHENYL-N-ALKYL(ALKENYL)-ETHANEPHOSPHONIC ACID ESTER AMIDES

Wilhelm Sirrenberg, Sprockhoevel, and Bernhard Homeyer, Opladen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

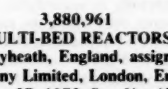
Filed Sept. 7, 1973, Ser. No. 395,091

Claims priority, application Germany, Sept. 20, 1972, 2246104

Int. Cl. A01n *9/36;* **C07f** *9/40, 9/44*

U.S. Cl. 260—956 **6 Claims**

1. An O-phenyl-N-alkyl(alkenyl)-ethanephosphonic acid ester amide of the formula



in which R is alkyl or alkenyl of up to 6 carbon atoms.

3,880,961

MULTI-BED REACTORS

Leslie Alcock, Bexleyheath, England, assignor to The British Petroleum Company Limited, London, England

Filed Dec. 27, 1973, Ser. No. 428,885

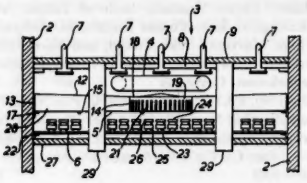
Claims priority, application United Kingdom, Jan. 23, 1973, 3335/73

Int. Cl. B01f *3/04*

U.S. Cl. 261—16 **7 Claims**

1. A quench box suitable for use in a down-flow reactor having walls defining an inner and an outer compartment, the wall between the inner and outer compartments having pas-

sages, a contoured roof higher at the edges and the middle to form a valley between, the valley having passages admitting to



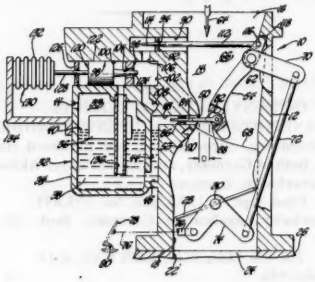
the inner compartment, and a floor having passages in the section defining the outer compartment.

3,880,962

METHOD AND APPARATUS FOR VARYING FUEL FLOW TO COMPENSATE FOR CHANGES IN BAROMETRIC PRESSURE AND ALTITUDE

Jerry P. Rhodes, Berkley, and Kenneth C. Bier, Bloomfield Hills, both of Mich., assignors to Colt Industries Operating Corporation, New York, N.Y.

Filed Apr. 2, 1973, Ser. No. 346,972
Int. Cl. F02m *7/24*
U.S. Cl. 261—39 A **8 Claims**



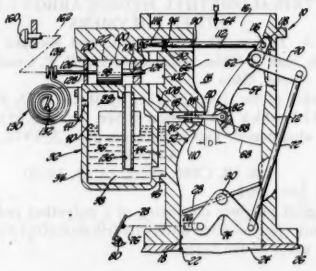
1. A method of providing compensating fuel to an internal combustion engine from a carburetor having a body, induction passage means formed through said body for communicating with said engine, variable venturi means situated within said induction passage means, fuel reservoir means for containing fuel, fuel delivery means including fuel metering means communicating between the interior of said fuel reservoir means and said induction passage means, said fuel metering means being effective to meter the rate of fuel flow from said fuel reservoir means through said fuel delivery means and into said induction passage means in accordance with the volume rate of air flow through said variable venturi means, and auxiliary conduit means communicating between said fuel within said fuel reservoir means and said induction passage means for supplying compensating fuel flow to said induction passage means generally in accordance with sensed ambient atmospheric pressure, comprising the steps of creating a sub-atmospheric pressure within said auxiliary conduit means of a magnitude reflective of the volume rate of air flow through said variable venturi means, and variably restricting the effective flow area of said auxiliary conduit means generally in accordance with said atmospheric pressure as to more nearly close-off said effective flow area as said atmospheric pressure decreases, said step of creating a sub-atmospheric pressure within said auxiliary conduit means comprising the steps of communicating substantially venturi vacuum to said auxiliary conduit means and variably venting such communicated vacuum generally in accordance with the degree to which said variable venturi means is moved toward a more nearly closed condition.

3,880,963

METHOD AND APPARATUS FOR VARYING FUEL FLOW TO COMPENSATE FOR CHANGES IN OPERATING TEMPERATURE

Kenneth C. Bier, Bloomfield Hills, and Jerry P. Rhodes, Berkley, both of Mich., assignors to Colt Industries Operating Corporation, New York, N.Y.

Filed Apr. 2, 1973, Ser. No. 346,971
Int. Cl. F02m *7/12*
U.S. Cl. 261—39 B **11 Claims**



1. A method of providing enrichment fuel to an internal combustion engine from a carburetor having a body, induction passage means formed through said body for communicating with said engine, variable venturi means situated within said induction passage means, fuel reservoir means for containing fuel, fuel delivery means including fuel metering means communicating between the interior of said fuel reservoir means and said induction passage means, said fuel metering means being effective to meter the rate of fuel flow from said fuel reservoir means through said fuel delivery means and into said induction passage means in accordance with the volume rate of air flow through said variable venturi means, and auxiliary conduit means communicating between said fuel within said fuel reservoir means and said induction passage means for supplying auxiliary fuel flow to said induction passage means generally in accordance with sensed temperature, comprising the steps of creating a sub-atomospheric pressure within said auxiliary conduit means of a magnitude reflective of volume rate of air flow through said variable venturi means, and variably restricting the effective flow area of said auxiliary conduit means generally in accordance with said temperature as to more nearly close-off said effective flow area as said temperature increases.

3,880,964

HOT WATER SUPPLY AND DISTRIBUTION STRUCTURE FOR COOLING TOWERS

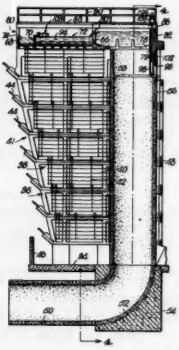
Homer E. Fordyce, Kansas City, Mo., and Graham Charles Parkinson, London, England, assignors to The Marley Company, Mission, Kans.

Filed Sept. 5, 1972, Ser. No. 286,341
Int. Cl. B01f *3/04*
U.S. Cl. 261—111 **6 Claims**

1. For use with a cross-flow cooling tower provided with a fill assembly having an air inlet face and an air outlet with inner and outer portions therebetween for serial passage of air therethrough:

horizontally adjacent, inner and outer hot liquid distribution basins defined by spaced inner and outer sidewalls and respectively overlying said inner and outer portions of the fill assembly for receiving and distributing hot liquid to be cooled to respective portions;

liquid supply means including an open-top, liquid collecting flume located inwardly of said inner distribution basin and having a common sidewall therewith for supplying liquid to said inner distribution basin when liquid collects in said flume to a level overflowing said common sidewall prior to subsequent gravitation of the liquid to said inner portion of the fill assembly; and



a conduit interconnecting said flume and outer distribution basin for delivery of fluid to the latter,

said conduit being in communication with said flume at a level therein below the level at which liquid overflows said common sidewall, whereby liquid is uniformly delivered to said outer distribution basin during all liquid cooling operations of said tower.

3,880,965

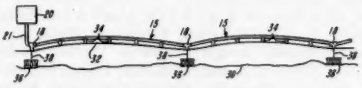
APPARATUS FOR AERATING A LIQUID

Charles G. Dudis, 401 Tamarac Trl., and Charles R. Kemper, 3487 Far Hills Ave., both of Dayton, Ohio 45429

Filed Nov. 24, 1972, Ser. No. 309,257

Int. Cl. B01f *3/04*

U.S. Cl. 261—122 **12 Claims**



1. Apparatus for diffusing a gas into a liquid, comprising a flexible sheet-like thermoplastics material forming an elongated tube having opposite end portions, means engaging said end portions of said tube and arranged for positioning said tube generally horizontally within the liquid, said tube having a gas permeable upper portion continuously along the length thereof and formed by permanently opened pores within said flexible sheet-like material to provide for the escape of microbubbles of gas from said tube upwardly into the liquid above said tube, said tube having a substantially gas impermeable lower portion to avoid the escape of gas from said lower portion of said tube, said tube being inflatable to a substantially circular cross-sectional configuration when said tube is submerged in the liquid and gas is supplied to said tube to provide for maximum gas flow through said tube, said tube being collapsible to a generally flat configuration in response to the pressure of the liquid when the gas supply is cut off to avoid the seepage of liquid into said tube, support means including an elongated substantially rigid support member extending longitudinally below the center of said tube, and means connecting said tube to said support member intermediate said end portions of said tube and cooperating to provide for flexing of said tube between said substantially circular configuration and said generally flat configuration.

3,880,966

CORONA TREATED MICROPOROUS FILM

Daniel Zimmerman, East Brunswick; Stephen Schulze, Gillette, and Stanley Wolfowitz, Union, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 183,128, Sept. 23, 1971, abandoned. This application Aug. 27, 1973, Ser. No. 391,912

Int. Cl. B29d *27/00*

U.S. Cl. 264—25 **8 Claims**

1. A process for preparing a microporous film selected from the group consisting of polyolefins, polyacetal homopolymers and copolymers, polyalkylene sulfides, polyarylene oxides, polyamides and polyesters of increased porosity and pore size which comprise subjecting to a corona discharge treatment a crystalline non-porous elastic starting film having an elastic recovery when subjected to a 50 percent extension at 25°C. and 65 percent relative humidity of at least about 40 percent, and a percent crystallinity of at least 20 percent, said corona discharge treatment sufficient to perforate said film with holes of up to about 20 microns, said corona discharge carried out using a voltage of up to about 15,000 volts, and rendering said corona-treated film microporous by a series of steps which comprise cold stretching the film to a length 10 to 300 percent of its original length at a temperature less than the temperature at which melting of the film begins and heat setting.

3,880,967

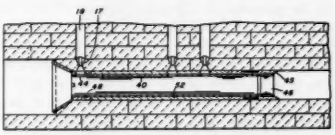
METHOD FOR LINING GUN BRICK IN COKE OVENS

Joseph R. Loggins, Hueytown, and Marlin M. Maddox, Birmingham, both of Ala., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 23, 1973, Ser. No. 390,978

Int. Cl. F27d *1/16*

U.S. Cl. 264—30 **6 Claims**



1. A method for lining gun brick in coke ovens having vertical flues and openings in said gun brick communicating with said flues, said method comprising:

a. providing a tubular refractory liner insertable in said gun brick, said liner having holes which upon insertion will be in proper alignment with said openings to said flues, said liner having an outside diameter less than the inside diameter of the gun brick and said liner having a fixed collar at one end;

b. sealing the holes in said liner and the openings in said gun brick;

c. inserting said liner in said gun brick, collar end first, with said sealed holes in said liner in alignment with said sealed openings in said gun brick;
d. packing sealing clay between said collar and the walls of said gun brick to form a seal around said collar, and an annular space between said liner and said gun brick;
e. filling said annular space with grout;
f. permitting said grout to set; and
g. opening the holes in said liner and the openings gun brick to allow a free flow of gas between the inside of said liner and said flues.

3,880,968

PROCESS FOR PRODUCING A GRANULAR MATERIAL FROM A SOLUTION AND/OR SUSPENSION

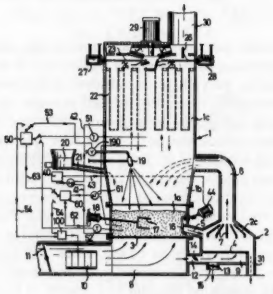
Jan Kaspar, Muttenz, Switzerland; Edouard Kieffer, Saint-Louis, France, and Michael Rosch, Allschwil, Switzerland, assignors to Ciba-Geigy AG, Basle, Switzerland

Filed June 26, 1972, Ser. No. 266,349

Claims priority, application Switzerland, July 1, 1971, 9684/71

Int. Cl. B01j *2/16*

U.S. Cl. 264—37 **11 Claims**



1. A process for producing a product granular material comprising the steps of:
a. forming a fluidized bed of bed granular material by passing a stream of gas upwards through the bed to maintain the bed granular material in a fluidized state, said gas being sufficiently hot to evaporate liquid in the bed and having a temperature lower than that which will heat damage the material being granulated;
b. dispersing onto the fluidized bed a fluent material taken from the group consisting of (1) a solution of the material to be granulated, (2) a suspension of the material to be granulated, (3) a mixture of such a solution and suspension, (4) dry granules of material to be granulated, (5) a solution of the material to be granulated plus a binder; (6) a suspension of the material to be granulated plus a binder; (7) a mixture of such a solution and suspension plus a binder; and (8) dry granules of material to be granulated plus a binder;
c. controlling said dispersing of the fluent material onto the bed and the temperature of the gas flowing upwards through the bed so that the temperature drop in the vertical direction across the bed from a point slightly above the bottom of the bed to a point just above the point from which the fluent material is dispersed is not less than 4°C and not more than 16°C and any liquid in the bed is evaporated;
d. withdrawing from the bed a granular material which, in the initial stages of the process, is a mixture of the bed granular material and the product granular material, and as the process continues, contains less of the bed granular material and more of the product granular material;
e. screening the withdrawn granular material for separating it into selected sizes;
f. recycling to the bed part of the withdrawn granular material including all of the fine fractions having a granular size smaller than 0.15 mm as well as a portion of the coarse fractions having a granular size greater than 0.15 mm, the balance of the coarse fractions being withdrawn from the process as the granular material to be produced; and
g. controlling the withdrawal of granular material from the bed and the weight of withdrawn material which is recycled so that the pressure drop in the vertical direction across the bed between substantially the same points as the temperature drop does not fall below 56 mm water column and does not rise above 150 mm water column, whereby in the granular material withdrawn from the bed at least 20% of the granules have a granule size from 0.15 to 2 mm.

3,880,969

METHOD OF PREPARING AN OPEN-CELLED AROMIC FOAM

Edwin J. Latos, Chicago, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 5, 1973, Ser. No. 412,932

Int. Cl. B29h *7/20*

U.S. Cl. 264—44 **4 Claims**

1. A process for preparing a ceramic foam which comprises firing a cured thermoset resin-ceramic mixture at a temperature of from about 1,000°C. to about 1,500°C. in a container which is open at the top and enclosed on all sides and the bottom, allowing the gases generated from the thermal degradation and combustion of said mixture to rise through the mixture and escape through the open-ended top of the container, thereby creating an open-celled structure, sintering the thus fired resin-ceramic mixture is a temperature of from about 1,350°C. to about 1,450°C., and recovering the resultant ceramic foam.

3,880,970

PROCESS FOR PRODUCING MICROCELLULAR SHAPED PIECES OF DIMENSIONAL ACCURACY, PARTICULARLY SHOE SOLES

Boris Nisonovich Dinzburg; Jury Alexandrovich Smetkin; Vladimir Iosifovich Alexenko; Vsevolod Andreevich Mikhailov, all of Moscow, U.S.S.R.; Dr. Ivan Lorant, Budapest, Hungary; Gyözö Seltenreich, Dunakeszi, Hungary; Jenö Keszei, Budapest, Hungary; György Marton, Budapest, Hungary; Albert Balázsfai, Budapest, Hungary; Jenö Donáth, Budapest, Hungary, and Ernö Bölcskei, Budapest, Hungary, assignors to Bar-, Mubor-Es Cipoysari Kutato Intezet, Parsi Jozsef, Budapest, Hungary and Vsesojuzny Nauchno-Issledovatelsky Institut Plenochnykh Materialov i Iskusstevennoi Kozhi, Moscow, U.S.S.R.

Continuation of Ser. No. 96,738, Dec. 10, 1970, abandoned. This application Feb. 13, 1973, Ser. No. 332,090

Claims priority, application Hungary, Dec. 30, 1969, 1210

Int. Cl. B29d *9/00;* **B29h** *7/20*

U.S. Cl. 264—54 **3 Claims**

1. In a process for producing closed cell, cellular, gas-expanded material which comprises compounding a vulcanizable stock containing
an elastomer,
a member selected from the group consisting of a plastomer, the melting temperature of which is equal to or less than the temperature of the first vulcanization step, and a thermoplastic elastomer,
a blowing agent the decomposition temperature of which is equal to or less than the temperature of the first vulcanization step, and
an accelerator system, vulcanizing said stock in two sequential stages in a closed mold at elevated temperature, while expanding the prevulcanized stock after the first stage,

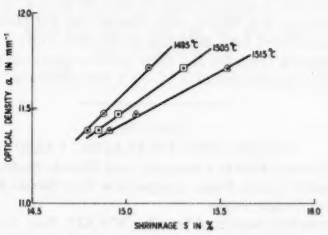
cooling the vulcanized material in said closed mold, and thereafter removing the cooled vulcanized material from the mold; the improvement comprising using an accelerator system which includes fast cross-linking in the first vulcanization step and together with the vulcanization temperature and vulcanization time effects vulcanization in the 20–70% cross-linking range; carrying out both the first and the second vulcanization stages in a completely filled mold under an external pressure of about 40–60 kg/cmhu 2 in said first stage and about 20 kg/cm² in said second stage, and cooling the completely vulcanized product under the latter said pressure in said closed mold thereby hardening the plastomer component and stabilizing the final product in a form which corresponds to the form of the closed mold used in the final vulcanization step, thus producing a dimensionally stable microcellular material.

3,880,971

CONTROLLING SHRINKAGE CAUSED BY SINTERING OF HIGH ALUMINA CERAMIC MATERIALS

Georges Pierre Pantanelli, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Dec. 26, 1973, Ser. No. 428,434
Int. Cl. C04b *35/10*
U.S. Cl. 264—56 **7 Claims**



1. The method of producing ceramic bodies the components of which comprise at least 95 weight percent Al_2O_3 containing at least a pair of identifiable benchmarks having a required spacing comprising producing an unfired ceramic body containing the benchmarks spaced apart a distance greater than the required spacing by an amount within the range of possible firing shrinkage of said ceramic and then firing said ceramic body wherein the improvement comprises measuring the optical density of said ceramic body prior to firing and then conducting the firing of said ceramic body at a temperature and for a time shown by prior assembled data correlating optical density and firing shrinkage to yield the degree of firing shrinkage which will produce the required spacing of said benchmarks in a ceramic of similar basic composition processed and measured under the same conditions.

3,880,972

PROCESS FOR MANUFACTURING MICA SHEET COMPOSITES

Allen N. Towne, Concord, and Thomas A. Bombicino, Wayland, both of Mass., assignors to New England Mica Company, Needham Heights, Mass.

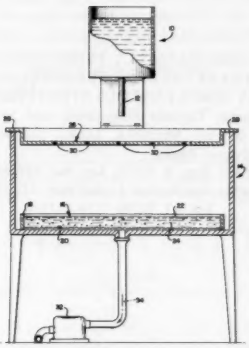
Filed Oct. 13, 1972, Ser. No. 299,880
Int. Cl. B28b *1/26*
U.S. Cl. 264—87 **14 Claims**

1. A method for manufacturing a mica sheet of uniform thickness comprising:

a. mixing a quantity of mica platelets with a liquid carrier and a thixotropic colloid agent;

b. delivering the mixture of carrier, thixotropic colloid agent and mica platelets to a sheet forming mold having a drain with a screen over the drain to prevent the mica platelets from passing through the drain;

c. removing the liquid carrier from the mold through the drain to yield a mica sheet on the screen; and



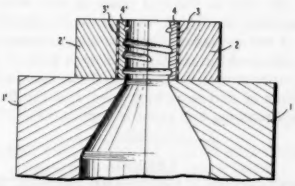
d. applying a binder resin to the mica sheet to strengthen the sheet; said thixotropic colloid agent causing said mica platelets to remain in suspension after said mixture of carrier, thixotropic colloid agent, and mica platelets are delivered to said mold, reducing lateral movement of said platelets toward said drain while liquid carrier is being removed through said drain, and enabling the formation of a mica sheet of uniform thickness by preventing the channeling of platelets toward the drain.

3,880,973

BLOW MOLDING PROCESS FOR FORMING A MOLDING HAVING A SCREW-THREAD PORTION

Shinsuke Yoshikawa, and Yuji Sawa, both of Fukushima, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha; Mitsui Toatsu Chemicals Inc., both of Tokyo, Japan

Filed Sept. 24, 1973, Ser. No. 399,911
Claims priority, application Japan, Sept. 28, 1972, 47-96647
Int. Cl. B29c *17/07*
U.S. Cl. 264—94 **2 Claims**



1. In a process for blow molding a thermoplastic resin parison to form a molding having a screw-thread portion by using a mold having a corresponding screw-thread portion, wherein the parison, which has once been cooled, is heated up to the range of a stretching temperature to stretch the parison in the longitudinal direction; and thereafter the parison is blown and molded within said mold, said screw-thread portion of said molding being molded only with blowing air pressure; and thereafter the resulting molding is removed from the mold after cooling and solidification; the improvement comprising the steps of heating only said screw-thread portion of the mold

for a short period of time to elevate the temperature thereof above the temperature of the resin parison body itself and up to the vicinity of the melting point of the parison so that the temperature of only the parison surface in contact with said screw-thread portion is made higher than that of the parison body itself, and thereafter removing the resulting molding having a completed screw-thread portion from the mold after cooling and solidification.

3,880,974

PROCESS FOR BIAXIALLY PRODUCING ORIENTED TUBULAR POLYETHYLENE TEREPHTHALATE FILMS BY SIMULTANEOUS STRETCHING

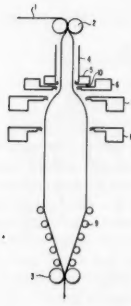
Ryohta Nohtomi; Tuyoshi Shigeyoshi, and Masayoshi Sugiyama, all of Fuji, Shizuoka, Japan, assignors to Kohjin Co., Ltd., Tokyo, Japan

Filed Aug. 8, 1973, Ser. No. 386,821

Claims priority, application Japan, May 17, 1973, 48-54144

Int. Cl. B29d *7/24, 23/04*

U.S. Cl. 264—95 **4 Claims**



1. A process for producing simultaneously biaxially oriented tubular polyethylene terephthalate films by simultaneous stretching which comprises extruding a molten polyethylene terephthalate resin from an annular die, introducing the cooled tubular non-stretched film between two pairs of speed controlling devices which have a different circumferential speed, and expanding in a stretching zone by applying gas pressure inside the tubular film while heating, by which the tubular film is simultaneously biaxially stretched 2.5 to 4.0 times in both directions, wherein said process is characterized by: the crystallinity of the non-stretched film is 3% to 18%; the length of the stretching zone from the starting point for stretching the film to the end point of stretching thereof is kept in the range of 1.0–1.5 times of the maximum expansion diameter of the stretched film; the film temperature at the initial one-third of the stretching zone is kept at 83°–108°C; the film temperature is continuously decreased in the remaining two-thirds of said stretching zone; and the film temperature at the stretching end point is kept at 70°–78°C.

3,880,975

CONTINUOUS HARDBOARD PRODUCTION

Lars-Erik Lundmark, Taby, Sweden, assignor to Ingenjorsfirma B-Projekt Aktiebolag, Enebyberg, Sweden

Filed Jan. 2, 1973, Ser. No. 320,336

Claims priority, application Sweden, Jan. 19, 1972, 599/72; May 26, 1972, 6909/72

Int. Cl. B29j *5/02, 5/04*

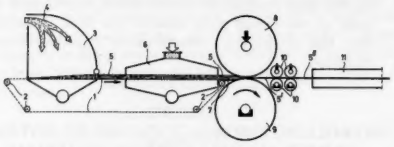
U.S. Cl. 264—119 **3 Claims**

3. An improved process for manufacturing a continuous flexible web of resin-bonded hardboard within the thickness range of betweenn 0.15 and 3.0 millimeters which comprises

a. providing an air suspension of a fiber-binder mixture containing a major part of defibrated ligno-cellulose plant substances and less than 10% of a thermosetting synthetic resin binder,

b. felting said air suspended fiber-binder mixture into a fluffy continuous mat having a moisture content between 2 and 10%,

c. feeding said mat continuously into a nip formed by cooperating press rollers heated to a temperature above 160°C while subjecting it to a pressure of at least 20 kilograms per centimeter in said nip, so as to compact it to about twice the thickness of the final product, to convert a substantial part of its moisture content into steam which is driven out backwards through the mat, and to activate



the added binder as well as part of the lignin content of the fibers themselves,

d. sequentially transferring unseparated segments of the continuous pre-pressed mat into a stationary flat plate press having its press plates heated to at least 180°C., and

e. sequentially subjecting each segment of pre-pressed mat to a pressure of about 80 kilograms per square centimeter for a short period of time while it is in said still unbroken mat step-by-step through the flat plate press to thus achieve final thickness of the mat, and

f. removing from the flat plate press a continuous flexible web of hardboard of 0.15 – 3.0 mm thickness.

3,880,976

PRODUCTION OF ELASTIC YARN

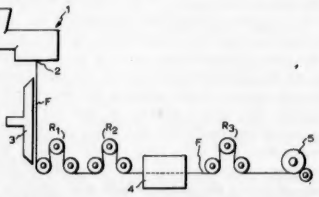
Misao Sumoto; Hideki Komagata, and Hiroshi Matsumoto, all of Honkatatacho, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 879,829, Nov. 25, 1969, abandoned. This application May 30, 1973, Ser. No. 365,138

Claims priority, application Japan, Dec. 4, 1968, 43-89224

Int. Cl. D01d *5/12*

U.S. Cl. 264—210 F **1 Claim**



1. A process for producing elastic filaments wherein: a composition prepared by adding

a. 5 to 15 parts of an oligomer of styrene, α-methyl styrene or vinyl toluene or a copolymerized oligomer thereof of molecular weight of 300 to 1,000 and

b. 0.1 to 1 part of a fatty acid amide, fatty acid methylol amide or higher fatty acid ester to

c. 100 parts of a polytetramethylene glycolpolyethylene terephthalate block copolymer of an inherent viscosity of more than 2.0 obtained from polytetramethylene glycol having a molecular weight of 1800 to 2000 and polyethylene terephthalate the content of which in the copolymer is 75–82 percent by weight,

is melt-spun to form filaments, which after being cooled and solidified, are stretched at a draw ratio of 4.5 to 8 at a temperature of 10°–30°C. and then the filaments are

shrunk at a filament temperature of 100°–150°C. so that the NDR (net draw ratio) is 1.3–1.8.

3,880,977

PROCESS FOR THE CONVERSION OF POLYURETHANE FOAM TO A CONTINUOUS DENSIFIED SHEET OF POLYURETHANE

Roy L. Gealer, Southfield, and Jacob Braslaw, Troy, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 6, 1973, Ser. No. 413,475
Int. Cl. B29c *25/00*; B29d *7/14*, *27/00*
U.S. Cl. 264—321 5 Claims

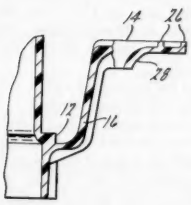
1. A method for converting polyurethane foam to a continuous densified sheet material which comprises contacting the foam with a 15 to 40 weight percent aqueous solution of acetic acid and compressing the resultant surface wet foam at a temperature in the range of 200°F. to 450°F. and under a pressure above about 400 psia.

3,880,978

METHOD FOR FORMING A REMOTE ANNULAR RIM OF PLASTIC MATERIAL

Theodore G. Apostoleris, Ann Arbor, Mich., and Marion L. Callahan, Cleveland, Ohio, assignors to Ford Motor Company, Dearborn, Mich., by said Apostoleris

Filed Apr. 23, 1974, Ser. No. 463,343
Int. Cl. B29f *1/022*
U.S. Cl. 264—328 10 Claims



1. The method of forming, in a mold, a flow molded plastic structure having a central body portion and a remote annular rim connected to a central body portion by at least one generally radially directed spoke member comprising the steps of: introducing plastic material into the mold at a central location;

flowing the plastic material, under heat and pressure, through the central body portion and at least one spoke member;

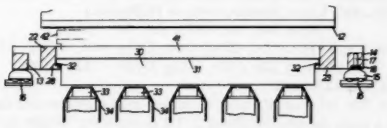
causing the plastic material to flow from the at least one spoke member into the annular rim through a first pair of radially offset, circumferentially oppositely directed low impedance flow paths and a second pair of radially offset, circumferentially oppositely directed high impedance flow paths, each path of said first pair being radially adjacent a path of said second pair.

3,880,979

METHOD AND APPARATUS FOR PRESSING CONCRETE PANELS

Trevor Hemingway, Dronfield, near Sheffield, England, assignor to Davy-Loewy Limited, Sheffield, Yorkshire, England

Continuation of Ser. No. 104,090, Jan. 5, 1971, abandoned, and a continuation-in-part of Ser. No. 704,715, Feb. 12, 1968, abandoned. This application Feb. 12, 1973, Ser. No. 331,613
Claims priority, application United Kingdom, Feb. 15, 1967, 7198/67
Int. Cl. B28b *3/04*, *7/10*
U.S. Cl. 264—333 12 Claims



1. A process for molding a concrete panel comprising the steps of

inserting a wet concrete mix into an open mold having mold walls and a mold base which is vertically movable relative to said mold walls when said mold is in a first filling position,

moving said mold horizontally to a pressing position vertically below a fixed horizontal platen,

raising said mold bodily until said mold walls are brought into contact with said platen,

then raising only said mold base to effect compression of said mix,

stripping the resulting molded panel from said mold, and removing said panel.

4. A molding press for molding panels comprising

a. a stationary constantly horizontal platen having a substantially flat underface free from downwardly projecting parts;

b. a mold having upstanding side walls and a perforated base;

c. means for moving said mold horizontally between a pressing position beneath said platen and a filling position which is remote from said platen and at which said mold is filled with panel-making material; and

d. power means at said pressing position and acting on at least said mold base for first vertically moving said mold to bring said mold walls into engagement with said underface of said platen and the effecting further movement of said base towards said platen to cause said material in said mold to be compressed;

e. the horizontal dimensions of said mold being adjustable up to predetermined maximum dimensions;

f. and said platen having horizontal dimensions exceeding said predetermined maximum dimensions.

3,880,980

RECOVERY OF URANIUM FROM HCl DIGESTED PHOSPHATE ROCK SOLUTION

Christian A. Wamser, Camillus, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Nov. 30, 1972, Ser. No. 311,012
Int. Cl. C01g *43/02*
U.S. Cl. 423—7 11 Claims

1. A process for recovering uranium from a solution containing phosphoric acid, uranium in the hexavalent state and a chloride salt selected from the group consisting of alkali metal chloride, alkaline earth metal chloride and ammonium chloride, comprising the steps of:

a. contacting the solution with a reductant capable of converting said uranium from the hexavalent to the tetravalent state;

b. contacting said reduced solution with an organic extractant capable of separating said phosphoric acid from the reduced solution and leaving said tetravalent uranium in said reduced solution; and

c. recovering said tetravalent uranium from said reduced solution.

3,880,981

CYCLIC ACID LEACHING OF NICKEL BEARING OXIDE AND SILICATE ORES WITH SUBSEQUENT IRON REMOVAL FROM LEACH LIQUOR

Renato M. Garingarao, Block 15, Lot 56, SSS Village No. II, Marikina, Rizal, and Michaelangelo A. Palad, 1332 Langit St., Sta. Cruz, Manila, both of Philippines

Filed Oct. 10, 1972, Ser. No. 295,911

Int. Cl. B01d *11/00*; **B01f** *1/00*; **C01g** *1/00, 49/00, 57/00, 53/00*; **C22b** *3/00*; **C22g** *23/00*; **C22b** *61/00*

U.S. Cl. 423—150 **9 Claims**

7. The method of claim 1 wherein said particles are slurried to a pulp density of about 5–10 percent by weight in leach liquor having an acid strength of about 1–1.7N.

3,880,982

PROCESS FOR REMOVING NITROGEN OXIDES FROM EXHAUST GASES

Jürgen Stenzel, Knapsack Aktiengesellschaft, Knapsack bei Cologne, Erftstadt Liblar, Germany

Filed Dec. 26, 1972, Ser. No. 318,672

Claims priority, application Germany, Dec. 30, 1971, 2165548

Int. Cl. B01d *53/00*

U.S. Cl. 423—213.2 **13 Claims**

1. A process for removing nitrogen oxides from exhaust gases, by reducing the nitrogen oxides to nitrogen with the use of a gaseous reductant, in contact with a catalyst and at elevated temperatures, which comprises contacting the nitrogen oxide-containing gas in admixture with at least stoichiometric proportions, based on the nitrogen content of the gas, of at least one member selected from the group consisting of hydrogen, carbon monoxide and gaseous hydrocarbon reductants, at temperatures substantially between 150° and 1,100°C., with a homogeneous mixture of copper, nickel and manganese aluminates as catalysts, elements Cu, Ni, Mn being in the said mixtures in any desirable ratio with respect to each other within the limits of 0.1 to 1.

3,880,983

FLUE GAS DESULFURIZATION WITH AMMONIUM SULFITE-BISULFITE SOLUTION

Albert B. Welty, Jr., Westfield, and Lindsay I. Griffin, Jr., Summit, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Nov. 19, 1971, Ser. No. 200,509The portion of the term of this patent subsequent to Feb. 29, 1989, has been disclaimed.

Int. Cl. C01b *53/34, 17/60*

U.S. Cl. 423—242 **7 Claims**

1. A process for removing sulfur dioxide from flue gas which comprises:

a. introducing a stream of flue gas containing sulfur dioxide into an absorption zone;

b. contacting said flue gas in said absorption zone with an aqueous solution of ammonium sulfite and ammonium bisulfite initially having a pH from about 6 to about 7 in order to remove sulfur dioxide therefrom;

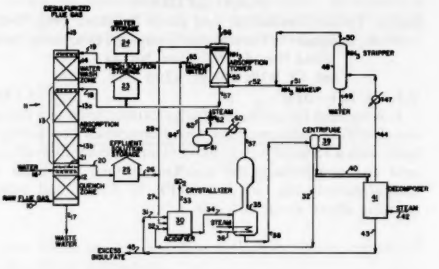
c. passing desulfurized flue gas from said adsorption zone to a wash zone;

d. contacting said desulfurized flue gas with wash water in said wash zone in order to remove ammonia therefrom;

e. discharging a flue gas stream of substantially reduced sulfur dioxide content from said wash zone;

f. withdrawing an aqueous absorber effluent solution containing ammonium bisulfite as the principal solute from said absorption zone;

g. dividing said absorber effluent solution into two portions and acidifying the first portion with ammonium bisulfate, thereby liberating sulfur dioxide and forming ammonium sulfate;



h. decomposing said ammonium sulfate at elevated temperature into ammonium bisulfate and gaseous ammonia in a decomposition zone;

i. reacting said gaseous ammonia with the second portion of said absorber effluent solution to prepare an aqueous solution of ammonium sulfite and ammonium bisulfite having a pH from about 6 to about 7; and

j. passing said aqueous solution prepared in step (i) to said absorption zone.

3,880,984

METHOD OF PRODUCING PLATE SINGLE-CRYSTAL OF GADOLINIUM MOLYBDATE

Seikichi Akiyama, Kokubunji, and Hirotsugu Kozuka, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 26, 1972, Ser. No. 275,163

Claims priority, application Japan, July 28, 1971, 46-55984

Int. Cl. B01j *17/00*

U.S. Cl. 423—263 **13 Claims**

1. A method for producing a plate single-crystal of gadolinium molybdate comprising forming a melt mixture of 1 mol. of gadolinium oxide and 3 mol. of molybdenum oxide, heating the melt so as to establish a temperature gradient at the surface of the melt in a radial direction from the center of the surface of a positive 1° to 5°C/mm, a temperature gradient from the surface of the melt in an upward direction up to 10 mm from the surface of a negative 5° to 10°C./mm and a temperature gradient from 10 mm above the surface in an upward direction of a negative 1° to 2°C/mm, and pulling a sced crystal of gadolinium molybdate rotating at about 30 to 180 r.p.m. and whose (110) face is in contact with the surface of the melt from the melt without changing the heating conditions of the melt.

3,880,985

PROCESS FOR PRODUCTION OF SULPHUR TRIOXIDE

Harke Haeseler, Leverkusen; Ludwig Dorn, Cologne; Wilhelm Möller; Jürgen Wokulat, both of Leverkusen; Franz Rübsam, Leverkusen, and Gerhard Heinze, Schildgen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 39,347, May 21, 1970, abandoned. This application June 1, 1972, Ser. No. 258,598

Claims priority, application Germany, June 10, 1969, 1929388

Int. Cl. C01b *17/68*

U.S. Cl. 423—533 **11 Claims**

1. A process for the catalytic production of sulfur trioxide comprising:

a. introducing an SO_2 containing gas having an SO_2 concentration of at least 8.5% by volume, said gas containing oxygen and being at a temperature of no greater than 300°C. into a fluidized bed and contacting said gas in said fluidized bed until at least 60% of the SO_2 in said gas is converted to SO_3 in said fluidized bed;

b. introducing the gaseous effluent from said fluidized bed, without any subsequent catalyst stage into an intermediate absorption stage and therein absorbing SO_3 produced in said fluidized bed; and

c. passing unconverted SO_2 from said intermediate absorption stage into at least one further catalyst stage under conditions effective to convert the unreacted SO_2 to SO_3, whereby the total conversion of So_2 to SO_3 is about 99%.

3,880,986

PROCESS FOR THE CONVERSION OF HYDROGEN SULFIDE IN GAS STREAMS OF LOW HYDROGEN SULFIDE CONCENTRATION TO SULFUR

David K. Beavon, Pasadena, Calif., assignor to The Ralph M. Parsons Company, Los Angeles, Calif.

Filed July 9, 1973, Ser. No. 377,448
Int. Cl. C01b *17/04*
U.S. Cl. 423—574 **13 Claims**

1. A process for the production of sulfur from acid gas streams of low hydrogen sulfide concentration and which contain carbonaceous impurities which comprises;

a. indirectly heating the acid gas stream of low hydrogen sulfide concentration to a temperature of from about 400°F to about 650°F to prevent conversion of the carbonaceous impurities to prevent the formation of tarry materials from the carbonaceous impurities;

b. generating a sulfur dioxide gas stream by the combustion of sulfur containing carbonaceous impurities in the presence of an oxygen containing gas in a high temperature flame zone, the amount of oxygen fed to said flame zone being sufficient to generate sulfur dioxide in an amount equal to about 50% of the hydrogen sulfide contained in the acid gas stream of low hydrogen sulfide concentration and the amount of sulfur fed to said flame zone being at least about 25% greater than the amount required for conversion to sulfur dioxide to prevent the formation of sulfur trioxide and convert contained carbonaceous impurities to gaseous carbon-sulfur compounds;

c. cooling the sulfur dioxide gas stream to a temperature of from about 270°F to about 750°F to condense excess sulfur free of carbonaceous impurities from the sulfur dioxide gas stream;

d. combining the heated acid gas stream of low hydrogen sulfide concentration with the cooled sulfur dioxide gas stream and catalytically converting the combined hydrogen sulfide and sulfur dioxide to elemental sulfur without converting the carbonaceous impurities to tarry materials;

e. condensing the formed elemental sulfur with entrained carbonaceous impurities from the gas stream and recycling a portion of the formed elemental sulfur containing the carbonaceous impurities to said flame zone.

3,880,987

HYDROGEN MANUFACTURING PROCESS

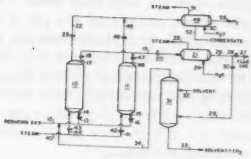
Nicholas C. Nahas, Baytown, Tex., assignor to Exxon Research and Engineering Company, Houston, Tex.

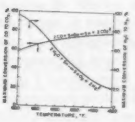
Filed June 1, 1973, Ser. No. 365,905
Int. Cl. C01b *1/02; 1/07*
U.S. Cl. 423—657 **19 Claims**

1. A process for the production of hydrogen which comprises:

a. contacting particles containing a mixture of stannic oxide and metallic tin with a reducing gas at a temperature in the range between about 800° F. and about 1,200° F. until from about 30 to about 50 weight percent of said stannic oxide has been converted to metallic tin;

b. discontinuing the contacting of said particles with said reducing gas;





c. contacting the said particles with steam at elevated pressure and at a temperature in the range between about 800° F. and about 1,200° F.; and

d. recovering substantially pure hydrogen.

3,880,988

METHOD OF IMPROVING ANTI-RH TYPING SERUM

Thomas W. Fly, Santa Ana, Calif., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Mar. 10, 1972, Ser. No. 233,810
Int. Cl. G01n *33/16*
U.S. Cl. 424—11 **4 Claims**

1. A method of improving anti-Rh slide typing serum whereby avidity of the Rh slide typing test is increased without causing substantial non-specificity of reaction comprising admixing in the serum from about one to about 50 grams per liter of resorcinol in a saline-albumin medium.

3,880,989

PRODUCTION OF ANTISERA COMPRISING FRACTIONATING PLASMA OR SERUM WITH AN ETHYLENE OXIDE-POLYOXYPROPYLENE BLOCK COPOLYMER

Luis A. Garcia, Huntington Beach, Calif., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

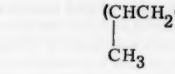
Filed Jan. 30, 1973, Ser. No. 327,894
Int. Cl. A61k *23/02*; **C08h** *7/00*
U.S. Cl. 424—11 **2 Claims**

1. A process for the preparation of a stable and concentrated antiserum comprising admixing

A. the final product prepared from blood plasma or serum by fractionation with a compound of the formula

$$HO\,(CH_2CH_2O)_a\,\underset{\displaystyle CH_3}{\underset{|}{(CHCH_2O)_b}}\,(CH_2CH_2O)_c\,H$$

wherein *a* and *c* are integers such that the hydrophilic portion represented by (CH_2CH_2O) constitutes at least about 50 percent of the molecule and b is an integer such that the hydrophobic portion represented by



has a molecular weight of at least about 950 comprising admixing said plasma or serum with from about 12 to about 16 percent by weight of said compound at a pH of from about 7 to about 8, separating the precipitate from the resulting suspension and admixing with from about 4.5 to about 5.5 percent by weight of said compound at a pH of from about 4.5 to about 5.5, separating the supernatant from the resulting suspension and admixing with from about 14 to about 18 percent of said compound at a pH of from about 6 to about 8 and collecting the resulting precipitate

with an aqueous solution of

B. the final product prepared from blood plasma or serum by fractionation with said compound comprising admixing said plasma or serum with from about 12 to about 16 percent by weight of said compound at a pH of from about 7 to about 8, separating the supernatant from the resulting suspension and admixing with from about 20 percent to about 24 percent by weight of said compound at a pH of from about 7 to 8, separating the supernatant from the resulting suspension and admixing with buffer at a pH of from about 4 to about 5 while holding the concentration of said compound at about 20 percent to about 24% and collecting the resulting precipitate.

3,880,990

ORAL RUMINANT COMPOSITIONS COMPRISING A MEDICINAL SUBSTANCE ENCAPSULATED OR EMBEDDED IN A BASIC POLYMER

Kurt Bauer, O Pladen-Luetzenkirchen, and Dieter Hoff, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 16, 1972, Ser. No. 226,971

Claims priority, application Germany, Feb. 19, 1971, 2107917

Int. Cl. A61k *9/00*

U.S. Cl. 424—19 **12 Claims**

1. In the process for the preparation of orally administered ruminant compositions in which at least one veterinary medicinal substance is encapsulated or imbedded in a normally solid physiologically acceptable basic polymer, the improvement which comprises homogeneously dispersing the medicinal substance in a solution of a basic polymer in a first solvent selected from the group consisting of methylene chloride, chloroform, ethyl acetate, acetone, toluene, isopropanol and mixtures of two or more thereof and adding thereto a second solvent selected from the group consisting of carbon tetrachloride, n-hexane, cyclohexane, ligroin and mixtures thereof which is miscible with the first solvent but in which said polymer and medicinal substance are substantially insoluble, said second solvent being added in at least sufficient quantity to produce a nontacky solid, and drying said non-tacky solid, said composition being insoluble in the rumen and soluble in the abomasum.

3,880,991

POLYMERIC ARTICLE FOR DISPENSING DRUGS

Seymour Yolles, Newark, Del., assignor to David E. Brook, Acton, Mass., a part interest

Continuation-in-part of Ser. No. 809,946, March 24, 1969, abandoned. This application Dec. 29, 1970, Ser. No. 102,432

Int. Cl. A61k *27/12*

U.S. Cl. 424—22 **4 Claims**

1. An intrauterine device for controllably dispensing an effective contraceptive amount of a progestin and an estrogen comprising a molded solid shaped intrauterine device having structural integrity containing an effective intrauterine dosage amount each of a progestin and an estrogen in combination uniformly and intimately dispersed throughout a crystalline polyethylene resin.

3,880,992

MIXTURE USEFUL ON A SUNSCREEN COMPOSITION

Martin Smolin, Edison; Norman Milstein, Iselin, both of N.J.; Irving A. Kaye, Brooklyn, N.Y., and Kalmen Motiuk, Edison, N.J., assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Dec. 19, 1973, Ser. No. 426,413

Int. Cl. C07c *101/62*

U.S. Cl. 424—60 **7 Claims**

1. A process for the preparation of a sunscreen composition comprising reacting an alkyl ester of p-amino benzoic acid wherein the alkyl group has 1–4 carbon atoms, with 1.5–2.0 moles of propylene oxide or ethylene oxide in the absence of a catalyst at a temperature of about 100°–180°C, and isolating an N-hydroxyalkyl p-amino benzoate.

3,880,993

PROCESS FOR THE FILTRATION OF A SUSPENSION CONTAINING A PROTEIN SUCH AS AN INFLUENZA VIRUS VACCINE

Jean-Claude Gilker, Montreal, Quebec, Canada, assignor to Institut de Microbiologie et d'Hygiene de Montreal, Laval-des-Rapides, Quebec, Canada

Filed Dec. 4, 1972, Ser. No. 311,883

Int. Cl. A61k *23/00*; **C12k** *7/00*

U.S. Cl. 424—89 **11 Claims**

1. A process for the filtration of a suspension containing an influenza virus, which comprises adding from 0.1 to 4 percent by weight of gelatine to the suspension having a pH of about 7.8, and filtering the gelatine containing suspension through a filtering press containing a stack of membranes primarily composed of cellulose derivatives having a pore size of from 8.0μm to 0.22μm arranged in order of decreasing porosities in the direction of fluid flow; said stack of membranes being covered by a pre-filter, and keeping a constant flow rate of the gelatine containing suspension which is being filtered by applying increasing air pressure to the gelatine containing suspension.

3,880,994

ANTIBIOTIC BU-1880

Hiroshi Kawaguchi; Hiroshi Tsukiura, both of Tokyo; Kei-ichi Fujisawa, Kamifukuoka, and Kei-ichi Numata, Tokyo, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Filed Dec. 6, 1972, Ser. No. 312,451

Int. Cl. H61k *21/00*

U.S. Cl. 424—119 **2 Claims**

1. The antibiotic Bu-1880, a basic peptide comprised of phenylalanine, leucine, α, γ-diaminobutyric acid and 3-hydroxy-8-methyldecanoic acid in an approximate molar ratio of 1:2:5:1, having the infrared spectrum of FIG. 1 and the following physical characteristics: pKa of 8.83 in aqueous ethanol, m.p. of 239°–242° C. with decomposition, $[\alpha]_D^{24}$=−18° (c. 1.0, N/10 HCl), an elemental analysis of C, 56.34; H, 8.51; N, 15.92, and a molecular weight of about 1050±50.

3,880,995

TREATMENT OF ARTHRITIS WITH MYCOPHENOLIC ACID AND DERIVATIVES

E. Linn Jones, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

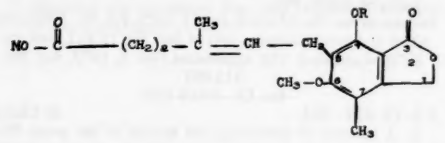
Filed May 14, 1973, Ser. No. 360,292

Int. Cl.[2] A01N *9/00*

U.S. Cl. 424—180 **4 Claims**

1. The process of treating inflammatory arthritis in humans which comprises administering by the oral route to a human suffering therefrom an arthritis symptom relieving amount of

mycophenolic acid or a derivative thereof represented by the following formula



wherein M is hydrogen, potassium, sodium or ammonium and R is hydrogen [or β-D-glucuronidyl].

3,880,996

TOPICAL ANALGESIC PREPARATION AND METHOD OF USING

Arthur I. Fisher, Box 228 Herod Point Rd., Wading River, N.Y. 11792

Filed Mar. 11, 1974, Ser. No. 449,765

Int. Cl. A61k *27/00*

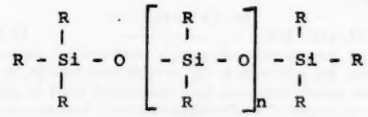
U.S. Cl. 424—184 **8 Claims**

1. An analgesic preparation suitable for use in the mitigation of pain of musculo-skeletal etiology comprising:

a. an analgesic in an amount sufficient to alleviate musculo-skeletal pain,

b. a rubefacient in an amount sufficient to provide localized heat sensation, and

c. a polysiloxane having the formula:



wherein R represents an organic radical selected from the group consisting of alkyl, aryl, alkaryl, and aralkyl, and *n* is an integer between 0 and 2,000, said polysiloxane having a viscosity between 50 and 200 centistokes in a range from about 10 to 40 percent by weight of the total preparation,

whereby percutaneous absorption of the analgesic is enhanced.

3,880,997

INSECTICIDAL AND ACARICIDAL PHOSPHOROUS-CONTAINING ESTERS OF 2-HYDROXYQUINOXALINE

Karl-Julius Schmidt, Wuppertal-Vohwinkel, and Ingeborg Hammann, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

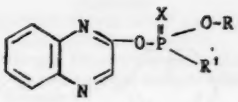
Division of Ser. No. 551,553, May 20, 1966, Pat. No. 3,763,160. This application Mar. 27, 1973, Ser. No. 345,401

Claims priority, application Germany, May 26, 1965, 4616212

Int. Cl. H01n *9/36*

U.S. Cl. 424—200 **11 Claims**

1. An insecticidal and acaricidal composition which comprises a dispersible carrier vehicle and an insecticidally and acaricidally effective amount of between about 0.000001 and 95% by weight of the composition of a phosphorus-containing ester of 2-hydroxy-quinoxaline having the formula



in which R is alkyl having 1 to 4 carbon atoms, R' is a member selected from the group consisting of alkyl having 1 to 4 carbon atoms, lower alkoxy having 1 to 4 carbon atoms and phenyl, and X is selected from the group consisting of oxygen and sulfur.

3,880,998

PESTICIDAL UTILITY OF CERTAIN PHOSPHORUS-CONTAINING IMINO PERHYDROOXAZINES

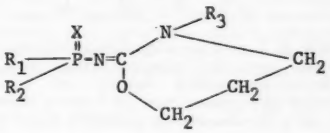
Edmund J. Gaughan, Kensington, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 300,943, Oct. 26, 1972, Pat. No. 3,803,312, which is a continuation-in-part of Ser. No. 705,017, Feb. 13, 1968, abandoned, which is a continuation-in-part of Ser. No. 673,993, Oct. 9, 1967, abandoned. This application Dec. 17, 1973, Ser. No. 425,360

Int. Cl. A01N *9/36*

U.S. Cl. 424—200 **3 Claims**

1. A method for controlling pests selected from the group consisting of insects and acarids comprising applying to the pest habitat a pesticidally effective amount of a compound having the formula



wherein X is oxygen or sulfur, R_1 is lower alkoxy, R_2 is lower alkoxy or lower alkylthio; R_3 is lower alkyl or allyl.

3,880,999

SYNERGISTIC INSECTICIDAL COMPOSITIONS CONTAINING BENZYL 2-PROPYNYL ETHERS

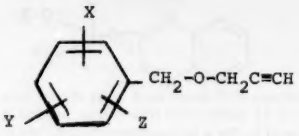
Douglas J. Hennessy, 47 Grayson Pl., Teaneck, N.J. 07666

Continuation-in-part of Ser. No. 164,411, July 20, 1971, abandoned. This application July 5, 1972, Ser. No. 265,423

Int. Cl. A01n *9/36, 9/24*

U.S. Cl. 424—200 **14 Claims**

1. An insecticidal composition comprising 0,0-dimethyl-S-[2-methoxy-1,3,4-thiadiazol-5(4H)-onyl-(4)-methyl]-dithiophosphate and, per part of said dithiophosphate, from 2 to 5 parts by weight of a benzyl propynyl ether of the formula



wherein each of X, Y and Z represents hydrogen, notro, or chlorine.

3,881,000

BIS-(PHOSPHORYLATED ANTHRALIN) COMPOUNDS IN THE TREATMENT OF PSORIASIS AND ARTHRITIS

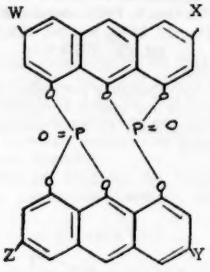
Charles Aubrey Freidmann, Florence, Italy; Peter Hofer, Liestal, Switzerland, and Winthrop E. Lange, Greenwich, Conn., assignors to Mundipharma AG, Rheinfelden, Switzerland

Division of Ser. No. 178,829, Sept. 8, 1971, Pat. No. 3,792,129. This application May 30, 1973, Ser. No. 365,309

Int. Cl. A61k *27/00*

U.S. Cl. 424—209 9 Claims

1. A pharmaceutical composition comprising a therapeutically sufficient quantity to achieve an anti-psoriatic action of a compound selected from the group consisting of compounds of the structure



wherein W, X, Y and Z are selected from the group consisting of hydrogen, lower alkyl, halo-alkyl, acetoxy-alkyl, carboxyl, carboalkyloxy-alkyloxyalkyl, halogen and nitro groups wherein said alkyl group is from 1 to 3 carbon atoms in chain length, and a pharmaceutically acceptable carrier therefor.

3,881,001

O,O-DIALKYL-β-PHENYLTHIOVINYL PHOSPHATES USED AS MOLLUSICIDES

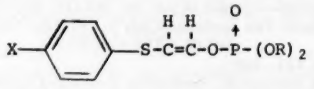
Melancthon S. Brown, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 128,600, Dec. 4, 1970, Pat. No. 3,796,799, which is a division of Ser. No. 704,557, Feb. 12, 1968, Pat. No. 3,584,084. This application Dec. 17, 1973, Ser. No. 425,463

Int. Cl. A01n *9/36*

U.S. Cl. 424—216 5 Claims

1. A method of killing mollusks which comprises contacting the mollusks with a molluscicidally effective amount of a compound of the formula



wherein R is alkyl of 1 to 4 carbon atoms, and X is hydrogen, halogen of atomic number 17 to 35 or alkyl of 1 to 4 carbon atoms.

3,881,002

INSECTICIDAL O-PHENYL S-ARYL ALKYLPHOSPHONODITHIOATES

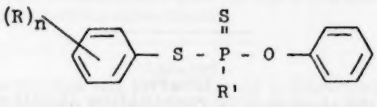
John P. Chupp, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 258,969, June 2, 1972, Pat. No. 3,816,569, which is a continuation-in-part of Ser. No. 11,912, Feb. 16, 1970, abandoned. This application Nov. 5, 1973, Ser. No. 413,091

Int. Cl. A01N *9/36*

U.S. Cl. 424—222 20 Claims

1. A method of destroying soil insects of the genus Diabrotica which comprises contacting the larval stage thereof with an insecticidally effective amount of an S-aryl O-phenyl alkylphosphonodithioate of the formula



wherein R is methyl or tertiary butyl, *n* is an integer from 0 to 2, and R′ is lower alkyl provided that when R is tertiary butyl, R′ is ethyl.

3,881,003

COMPOSITIONS CONTAINING 3-SULFANILAMIDO-4,5-IMETHYLISOXAZOLE AND A TRIMETHOXYBENZYL PYRIMIDINE

Walter Rehm, Riehen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 12, 1973, Ser. No. 340,039

Claims priority, application Switzerland, Mar. 16, 1972, 3930/72

Int. Cl. A61k *27/00*

U.S. Cl. 424—229 12 Claims

1. A potentiated sulfonamide antibacterial composition wherein the sulfonamide has a prolonged half-life in blood plasma which comprises from about 0.05 parts to about 20 parts by weight of a sulfonamide selected from the class consisting of 3-sulfanilamido-4,5-dimethylisoxazole, and a salt thereof with a pharmaceutically acceptable base and 1 part by weight of a pyrimidine selected from the class consisting of 2,4-diamino-5-(3,4,5-trimethoxybenzyl)-pyrimidine, or a salt thereof with a pharmaceutically acceptable acid.

3,881,004

AMMONIUM NITRATE PLANT

Harold D. Kelly, Marseilles; Charles F. Block, Ottawa, both of Ill., and Thomas L. McDonald, Richmond Heights, Ohio, assignors to Masar, Incorporated, Richmond Heights, Ohio

Filed Dec. 29, 1972, Ser. No. 319,864

Int. Cl. B01d *53/34*

U.S. Cl. 423—235 26 Claims

1. In a process for preparation of nitric acid by oxidation of ammonia in a gas stream to nitrogen oxides and aqueous absorption in an absorber of said nitrogen oxides to form nitric acid, said absorber being maintained under pressure by a compressor, said gas stream from said process being utilized to drive said compressor, said gas stream consisting essentially of nitrogen, oxygen, water and nitrogen oxides, the improvement comprising treating said gas stream prior to use in said compressor by:

1. scrubbing said gas stream with cold water at a sufficiently low temperature and for a time sufficient to reduce the concentration of nitrogen oxides in said tail gas to less than 1800 parts per million by volume and to recover additional nitric acid;
2. scrubbing said gas stream from step (1) with a treating liquor consisting essentially of water, nitric acid, urea and

ammonium nitrate at a temperature and for a time sufficient to reduce the concentration of nitrogen oxides in said tail gas to less than 400 parts per million by volume, said gas stream leaving said treating liquor at a temperature no greater than 10°C., and

3. reheating said gas stream from step (2) before its return to said compressor.

3,881,005

PHARMACEUTICAL DISPERSIBLE POWDER OF SITOSTEROLS AND A METHOD FOR THE PREPARATION THEREOF

Arvind L. Thakkar, and Erold R. Diller, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 13, 1973, Ser. No. 387,999

Int. Cl.[2] A61K *17/00*

U.S. Cl. 424—238 **14 Claims**

1. A pharmaceutical dispersible powder for oral administration consisting essentially of sitosterols; an excipient or a combination of excipients selected from the group consisting of starch, U.S.P., starch hydrolysate having a D.E. of from about 5 to about 15, cellulose, microcrystalline cellulose, dextrose, fructose, lactose, maltose, sucrose, corn syrup solids, casein, sodium caseinate, nonfat dry milk solids, stearic acid, sodium stearate, magnesium stearate, silicon dioxide, fumed, and vegetable oils; a pharmaceutically acceptable surfactant selected from the class consisting of polyoxyethylene (20) sorbitan monolaurate, polyoxyethylene (20) sorbitan monopalmitate, polyoxyethylene (20) sorbitan monooleate, polyoxyethylene (20) sorbitan monostearate, and sodium lauryl sulfate; and water.

3,881,006

HYPOGLYCEMIC COMPOSITIONS CONTAINING BENZHYDRYLLACTAMIMIDE DERIVATIVES

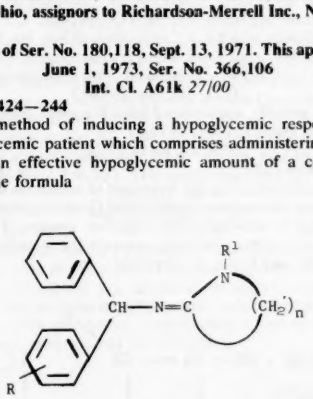
Johann Martin Grisar, and Thomas R. Blohm, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

Division of Ser. No. 180,118, Sept. 13, 1971. This application June 1, 1973, Ser. No. 366,106

Int. Cl. A61k *27/00*

U.S. Cl. 424—244 **8 Claims**

1. A method of inducing a hypoglycemic response is a hyperglycemic patient which comprises administering to said patient an effective hypoglycemic amount of a compound having the formula



wherein R is selected from hydrogen or lower alkoxy of from 1 to 6 carbon atoms; R^1 is selected from hydrogen or lower alkyl of from 1 to 4 carbon atoms; *n* is a whole integer of from 5 to 11; or a pharmaceutically acceptable acid addition salt of said compound.

3,881,007

COMBATING FUNGI WITH AROMATIC LACTAM-HYDRAZONES

Paul-Ernst Frohberger, Leverkusen, and Arthur Botta, Krefeld, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

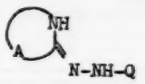
Filed July 9, 1973, Ser. No. 377,861

Claims priority, application Germany, July 18, 1972, 2235113

Int. Cl. A01n *9/14, 9/22*

U.S. Cl. 424—244 **7 Claims**

1. A method of combating fungi which comprises applying to such fungi or their habitat a fungicidally effective amount of a lactum hydrazone of the formula



in which

A is $-(CH_2)_n-$ optionally substituted by at least one of C_{1-6} alkyl and phenyl,

n is 2, 3, 5 or 11, and

Q is phenyl, chlorophenyl, nitrophenyl, dinitrophenyl, carboxyphenyl, sulfophenyl or amidosulfonylphenyl,

or its acid addition salt.

3,881,008

N-2-NITROBUTYL MORPHOLINE MIXED WITH N-ALKYL-DIMETHYL-BENZYL AMMONIUM CHLORIDE AS SLIME CONTROL COMPOSITION

Bernard F. Shema, Glenside; Robert H. Brink, Jr., Doylestown, and Paul Swered, Philadelphia, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed May 30, 1973, Ser. No. 365,312

Int. Cl. A01h *9/20;* **A61k** *27/00*

U.S. Cl. 424—248 **8 Claims**

1. A composition for the control of *Aerobacter aerogenes* in aqueous systems comprising N-2-nitrobutyl morpholine and N-alkyl-dimethyl-benzyl ammonium chloride, containing from 10 to 14 carbons, wherein the weight ratio of the morpholine to the chloride ranges from about 5:95 to about 95:5 respectively.

3,881,009

IMINES AS ANTIBACTERIAL AGENTS

Florin Seng; Kurt Ley, and Karl Georg Metzger, all of c/o Farbenfabriken Bayer AG, Leverkusen, Germany

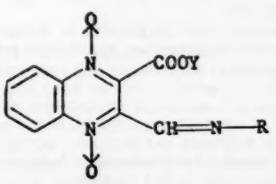
Division of Ser. No. 323,953, Jan. 15, 1973, which is a division of Ser. No. 130,007, March 31, 1971. This application Aug. 16, 1973, Ser. No. 388,840

Claims priority, application Germany, Apr. 2, 1970, 2015676

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **32 Claims**

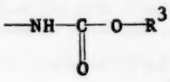
1. An antibacterial composition which comprises an antibacterially effective amount of a compound of the formula



or a pharmaceutically acceptable non-toxic salt thereof wherein

Y is hydrogen, an alkali metal cation or the cation $R^5—NH_3^+$; and

each of R and R^5 is



wherein

R^3 is alkyl of 1 to 4 carbon atoms or hydroxyalkyl of 1 to 4 carbon atoms,

in combination with a pharmaceutically acceptable non-toxic inert diluent or carrier.

3,881,010
ANTI-BACTERIAL PROCESS USING SUBSTITUTED THIADIAZOLES

Sugavanam Balasubramanyan, and Roland Thomas Victor Fox, both of Wokingham, England, assignors to Imperial Chemical Industries Limited, London, England

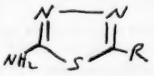
Filed May 23, 1973, Ser. No. 363,157

Claims priority, application United Kingdom, June 8, 1972, 26809/72

Int. Cl. A01n *9/12, 9/22*

U.S. Cl. 424—270 **2 Claims**

1. A method of combating bacteria which causes diseases of plants which comprises applying to said bacteria an anti-bacterially effective amount of a compound of the formula:



wherein R is phenyl or phenyl substituted with halogen, alkyl of 1–6carbons, alkoxy of 1–6 carbons, nitro, or amino; or a phytologically acceptable acid addition salt thereof.

3,881,011
ANTICONVULSANT

August Amann, Horst Koenig, both of Ludwigshafen; Peter Thieme, Ruchheim; Hubert Giertz, Limburgerhof, and Rolf Kretzschmar, Uetersen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Rhine, Germany

Filed Feb. 11, 1974, Ser. No. 441,335

Claims priority, application Germany, Feb. 10, 1973, 2306543

Int. Cl. A61k *27/00*

U.S. Cl. 424—270 **9 Claims**

1. A pharmaceutical preparation in dosage unit form adapted for oral administration to obtain an anticonvulsant effect, comprising, per dosage unit, an anticonvulsant effective non-toxic amount within the range from about 10 to 100 milligrams of a compound selected from the group consisting of anhydro-2-mercapto-4-methyl-5-phenyl-1,3,4-thiadiazolium hydroxide and anhydro-2-mercapto-4-methyl-5-(p-chlorophenyl)-1,3,4-thiadiazolium hydroxide, and conventional inert excipients and auxiliaries.

3,881,012
PHARMACEUTICAL PREPARATIONS OF PENICILLIN COMPOUNDS FOR RECTAL USE

Hiroyuki Mima, Hyogo; Tai Matsuzawa, Osaka; Katsuo Aoki, Hyogo; Shin-Ichiro Hirai, Kyoto; Toshiaki Ikenaga, and Yoshihiro Okada, both of Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

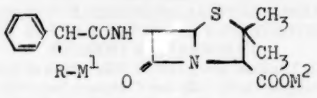
Filed Mar. 2, 1973, Ser. No. 337,476

Claims priority, application Japan, Mar. 6, 1972, 47-23279

Int. Cl. A61k *21/00, 27/00*

U.S. Cl. 424—271 **10 Claims**

1. A pharmaceutical composition for rectal use which comprises (1) a penicillin compound of the formula



wherein R is $—SO_2—O—$ or $—CO—O—$ and M^1 and M^2 are the same or different and each represents an alkali metal, (2) an oily or fatty suppository base in an amount of 0.5 to 15 times the weight relative to the weight of the penicillin compound and (3) at least one nonionic surfactant selected from the group consisting of (a) polyoxyethylene higher alcohol ethers, wherein the average number of polyoxyethylene units is 5–30 and the higher alcohol has 8–18 carbon atoms, (b) polyoxyethylene fatty acid esters, wherein the average number of polyoxyethylene units is 5–30 and the fatty acid has 12–18 carbon atoms and (c) polyoxyethylene sorbitan fatty acid esters, wherein the average number of polyoxyethylene units is 4,5 or 20 and the fatty acid has 12–18 carbon atoms, in an amount of 0.01 to 0.5 time the weight relative to the weight of the oily or fatty base, the HLB value of the nonionic surfactant being within the range of 7 to 18.

3,881,013
PENICILLIN COMPOSITIONS AND THEIR ADMINISTRATION

Kenneth David Hardy, Horsham; John Herbert Charles Nayler, Dorking, and Edward Raymond Stove, Redhill, all of England, assignors to Beecham Group Limited, Middlesex, England

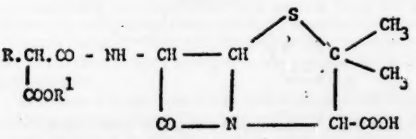
Continuation-in-part of Ser. No. 113,740, Feb. 8, 1971, Pat. No. 3,853,849, which is a continuation of Ser. No. 833,848, May 29, 1969, abandoned, which is a continuation of Ser. No. 679,995, Nov. 2, 1967, abandoned. This application July 18, 1974, Ser. No. 489,612

Claims priority, application United Kingdom, Nov. 5, 1966, 49697/66; Jan. 27, 1967, 4079/67

Int. Cl. H61k *27/00*

U.S. Cl. 424—271 **12 Claims**

1. A composition for the treatment of infections in humans and animals due to Gram-positive and Gram-negative bacteria comprising an anti-bacterially effective amount of a mono-ester of an α-carboxypenicillin wherein the α-carboxy group is esterified and having the formula:



or a non-toxic pharmaceutically acceptable salt thereof, wherein R is phenyl or 3-thienyl and R^1 is phenyl or lower

alkyl phenyl in a pharmaceutically acceptable non-toxic carrier formulated for oral administration in unit dosage form.

3,881,014

N-TRITYLIMIDAZOLES FOR TREATING FUNGAL INFECTIONS

Erik K. Regel, Wuppertal-Kronenberg; Karl-Heinz Buchel, Leverkusen, and Manfred Plempel, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Wuppertal-Elberfeld, Germany

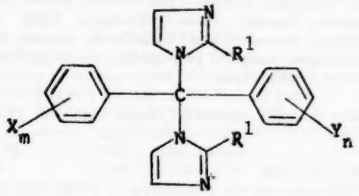
Division of Ser. No. 187,814, Oct. 8, 1971, Pat. No. 3,824,310, which is a division of Ser. No. 873,098, Oct. 31, 1969. This application June 22, 1973, Ser. No. 372,780

Claims priority, application Germany, Nov. 5, 1968, 1806995

Int. Cl. H61k *27/00*

U.S. Cl. 424—273 **17 Claims**

1. A pharmaceutical composition in the form of a tablet, a capsule, a powder, a spray, a sterile aqueous suspension, an injectable solution, an elixir, a syrup or a suppository useful for treating fungal infections pathogenic to humans or animals which comprises an antifungal amount of a compound of the formula



wherein

R^1 is hydrogen or alkyl of 1 to 4 carbon atoms;

X and Y are alkyl of 1 to 4 carbon atoms; and

m is 0, 1 or 2, and

n is 0, 1 or 2;

or a pharmaceutically acceptable non-toxic salt thereof, in combination with a pharmaceutically acceptable nontoxic inert diluent or carrier.

3,881,015

PHARMACEUTICAL COMPOSITIONS AND METHODS OF INHIBITING HISTAMINE ACTIVITY WITH ISOTHIOUREA COMPOUNDS

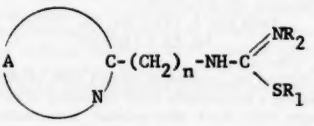
James Whyte Black, Hemel Hempstead; Graham John Durant, Welwyn Garden City; John Colin Emmett, Kimpton, and Charon Robin Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Limited, Hartfordshire, England

Continuation of Ser. No. 330,548, Feb. 8, 1973, abandoned, which is a continuation-in-part of Ser. No. 80,819, Oct. 14, 1970, Pat. No. 3,736,331. This application June 13, 1974, Ser. No. 478,999

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **11 Claims**

1. A pharmaceutical composition to inhibit H-2 histamine receptors, said H-2 histamine receptors being those histamine receptors which are not inhibited by mepyramine but are inhibited by burimamide, comprising a, pharmaceutical carrier and, in an effective amount to inhibit said receptors, an isothiourea compound of the formula:



in which:

n is 2 to 5;

A taken together with the carbon and nitrogen atoms shown forms an imidazolyl, pyridyl, 1,2,4-triazolyl, pyrazolyl or thiazolyl ring;

R_1 is an alkyl group having 1 to 6 carbon atoms, an alkenyl or alkynyl group having 2 to 6 carbon atoms or $(CH_2)_mZ$ where m is 1 to 3 and Z is phenyl optionally monosubstituted by halogen, hydroxy or nitro; hydroxy; di-lower alkylamino; cyano; carboxy; phenoxy; benzhydryloxy or imidazolyl and

R_2 is hydrogen, alkyl having 1 to 4 carbon atoms, phenyl or benzyl or R_1 and R_2 together with the carbon atoms to which they are attached may form a thiazoline or thiazolin-4-one ring

or a pharmaceutically acceptable acid addition salt thereof.

3,881,016

PHARMACEUTICAL COMPOSITIONS AND METHODS OF INHIBITING HISTAMINE ACTIVITY WITH CARBOXAMIDINE COMPOUNDS

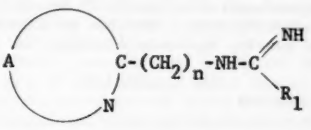
James Whyte Black, Hemel Hempstead; Graham John Durant, Welwyn Garden City; John Colin Emmett, Kimpton, and Charon Robin Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Limited, Hartfordshire, England

Continuation of Ser. No. 335,853, Feb. 26, 2973, abandoned, which is a continuation-in-part of Ser. No. 80,794, Oct. 14, 1970, Pat. No. 3,734,924. This application June 13, 1974, Ser. No. 478,998

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **8 Claims**

1. A pharmaceutical composition to inhibit H-2 histamine receptors, said H-2 histamine receptors being those histamine receptors which are not inhibited by mepyramine but are inhibited by burimamide, comprising a pharmaceutical carrier, and in an effective amount to inhibit said receptors, a carboxamidine compound of the formula:



in which:

n is 3 to 5;

A taken together with the carbon and nitrogen atoms shown forms an imidazolyl, 2-thiazolyl, 1,2,4-triazolyl, pyrazolyl or pyridyl ring and

R_1 is alkyl having from 1 to 4 carbon atoms; phenyl optionally monosubstituted by halogen, hydroxy or nitro; benzyl or lower alkylthio-lower alkyl or a pharmaceutically acceptable acid addition salt thereof.

3,881,017

9-THIAPROSTAGLANDIN COMPOSITIONS

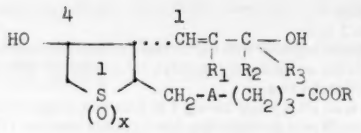
Isidoros Vlattas, Summit, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 18, 1973, Ser. No. 361,752

Int. Cl. A61k *27/00*

U.S. Cl. 424—275 **3 Claims**

1. A pharmaceutical composition comprising a compound, corresponding to the formula



wherein each of R and R_3 is lower alkyl, lower alkenyl, lower alkynyl, (3 to 7 ring-membered cycloalkyl or cycloalkenyl)-C_mH_{2m} wherein m is an integer from 0 to 4, or Ph-C_nH_{2n}, wherein Ph is phenyl, (lower alkyl)-phenyl, (lower alkoxy)-phenyl, (lower alkylenedioxy)-phenyl, (halogeno)-phenyl, (trifluoromethyl)-phenyl, (nitro)-phenyl or (di-lower alkylamino)-phenyl, n is an integer from 1 to 4 and x such from 0 to 2, or R is also hydrogen, Ph, an alkali metal or one equivalent of an alkaline earth metal and R_3 is also (lower alkoxy or halo)-lower alkyl, A is ethylene or ethenylene, R_1 and R_2 are hydrogen or lower alkyl, or the 1,2-dihydroderivatives thereof containing no double-bond at the 1-chain-carbon atom, in an amount sufficient to produce a prostaglandin-like effect together with a pharmaceutical excipient.

3,881,018

SUBSTITUTED AMIDOPHENYLGUANIDINE FUNGICIDES

Arno Widdig, Blecher; Engelbert Kuhle, Bergisch Gladbach; Ferdinand Grewe, Burscheid; Helmut Kaspers, Leverkusen; Hans Scheinpflug, Leverkusen, and Paul-Ernst Frohberger, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

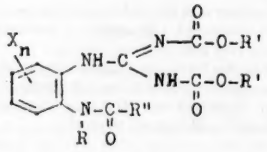
Continuation-in-part of Ser. No. 83,159, Oct. 22, 1970. This application Mar. 1, 1973, Ser. No. 337,183

Claims priority, application Germany, Nov. 6, 1969, 1955749

Int. Cl. A01n *4/20*

U.S. Cl. 424—300 **10 Claims**

1. A fungicidal composition comprising a fungicidally effective amount of a compound of the formula



in which

each X independently is halogen lower alkyl or lower alkoxy,

n is 0, 1 or 2,

R is hydrogen or lower alkyl,

R′ is alkyl of 1–12 carbon atoms, and

R″ is hydrogen; alkyl of 1–18 carbon atoms; alkyl of 1–18 carbon atoms substituted by lower alkoxy, alkoxycarbonyl of 2–5 carbon atoms or phenoxy; cycloalkyl of 5–8 ring carbon atoms; phenyl; or phenyl substituted by halogen, lower alkyl or lower alkoxy,

in admixture with a carrier.

3,881,019

O-MERCAPTO-BENZAMIDES AS HYPOGLYCEMIA AGENTS

Milton Wolf, West Chester; John H. Sellstedt, King of Prussia, and Richard L. Fenichel, Wyncote, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 232,285, March 6, 1972, Pat. No. 3,829,488. This application Oct. 10, 1973, Ser. No. 405,241

Int. Cl. A61k *27/00*

U.S. Cl. 424—324 **5 Claims**

1. A method for altering the 1 sugar concentration in a warm-blooded animal in need thereof which comprises administering to said animal a composition containing as an essential active ingredient at least one amide selected from the group consisting of N,N-di(lower)alkyl-o-mercapto-benzamide, N-(lower)alkyl-o-mercapto-benzamide, N-amidino-4-fluoro-2-mercapto-benzamide, and the pharmaceutically acceptable salts thereof, in an amount sufficient to reduce said blood sugar level.

3,881,020

PROCESS OF PREPARING AQUEOUS SUSPENSION OF CHLORAMPHENICOL PALMITATE

Toshio Nakamura, Ibaraki; Tadao Maeda, Minoo; Tomoaki Kiyotaki, Ibaraki; Yasuo Katsuhara, Kobe; Yoshio Sakamoto, Honmachi, and Mitsuo Iwade, Senrioka Higashi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 17, 1971, Ser. No. 209,150

Claims priority, application Japan, Dec. 22, 1970, 45-117195

Int. Cl. A61k *27/00*

U.S. Cl. 424—324 **3 Claims**

1. A process for the preparation of a bitterless aqueous suspension containing uniform alpha-type crystals of chloramphenicol palmitate which comprises melting from 1 to 20 parts chloramphenicol palmitate alone at a temperature of from 90°–95°C, mixing the melt with an aqueous solution containing from 0.05 to 10 parts of one or more pharmaceutically acceptable dispersing agents selected from the group consisting of polyvinyl alcohol, polyvinylpyrrolidone, hydroxypropylcellulose, sodium carboxymethylcellulose, hydroxypropyl methylcellulose, gum arabic, carboxyvinyl polymer, polyethylene glycols, propylene glycol, sorbitan fatty acid esters, polyoxyethylene sorbitan fatty acid esters, polyoxyethylene fatty acid esters, polyoxyethylene castor oil derivatives, glyceryl fatty acid esters, sucrose fatty acid esters, alkyl sulfates, dialkylsulfosuccinates and fatty acid sarcosinates and 70 to 99 parts water at a temperature of from 60°C to the melting point of the chloramphenicol palmitate, cooling the resulting dispersion to room temperature and thereafter reheating the thus cooled dispersion to a temperature of from 40° to 60°C to obtain alpha-type crystals of chloramphenicol palmitate having an average particle diameter of from 0.06 to 0.19 microns.

3,881,021

CHAMPAGNIZATION OF WINE IN A CONTINUOUS STREAM

Artemy Arutjunovich Merzhanian, ulitsa Novokuznechnaya, 10, kv. 4, Krasnodar; Sergei Alexeevich Brusilovsky, 5 Monetchikovsky pereulok, 13, kv. 63, Moscow; Naskid Grigorievich Sarishvili, ulitsa Geroev Panfilovtsev, 1, korpus 4, kv. 52, Moscow; Zbignev Nikolaevich Kishkovsky, ulitsa Begovaya, 22, korpus 3, kv. 207, Moscow; Isaak Iosifovich Bronshtein, 1 Dmitrovsky proezd, 4, kv. 1, Moscow, and Mikhail Alexeevich Gagarin, Profsojuznaya ulitsa, 33, kv. 144, Moscow, all of U.S.S.R.

Filed Jan. 4, 1973, Ser. No. 320,927

Int. Cl. C12g *1/06*

U.S. Cl. 426—15 **1 Claim**

1. A method for continuous stream wine champagnization by subjecting a fermentable stock consisting of pre-processed champagne wine stock after primary fermentation comple-

tion, a solution of crystalline sucrose in wine stock and yeast to secondary fermentation in a single vessel having top and bottom ends and heat exchange means surrounding the outside wall and containing a plurality of partitions in concentric relationship to the vessel wall to form a plurality of adjacent annular chambers having a common wall within said vessel, said partitions being alternately rigidly mounted at the top and bottom of said vessel to obtain alternating annular gaps at the top and bottom of the vessel for passage of liquid from one chamber to another, said method comprising forming said fermentable stock into a stream, flowing said stream into said vessel near the center of one end thereof and through said vessel at a constant pressure and a stable mean linear velocity, said stream passing through each successive chamber and annular gap in alternating up and down flow toward the vessel wall changing its direction at least once, cooling said stream of fermentable stock in the last annular chamber by said heat exchange means, and flowing said stream out of the vessel through outlet openings in one end thereof, thereby causing recuperative cooling of the entire stream by contact of the stream in each chamber with the wall separating the same from the next adjacent chamber.

3,881,022

FLAVORING AGENT

Rupert Josef Gasser, Marysville, Ohio, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Sept. 27, 1972, Ser. No. 292,724

Claims priority, application Switzerland, Sept. 28, 1971, 14114/71

Int. Cl. A23l *1/26*

U.S. Cl. 426—48 **14 Claims**

1. A process for preparing a meat flavoring which comprises adding a proteolytic enzyme, an enzyme capable of degrading nucleotides, and an enzyme capable of converting carbohydrates into hexose phosphates, pentose phosphates and lactates to an aqueous solution containing yeast autolysate and hexose, the total dry matter content of the solution not exceeding 25% by weight the hexose content of the solution not exceeding 1.5% by weight and the yeast autolysate being present in an amount at least 15 times the weight of hexose, subjecting the resulting mixture to a treatment for a period of time sufficient to effect enzymatic reaction upon said yeast autolysate and hexose, said treatment comprising maintaining the pH of the solution between 4.0 and 7.0, and adjusting its temperature to below 37°C if the pH is between 4.0 and 6.0, or to below 15°C if the pH is between 6.0 and 7.0, thereafter concentrating the solution to a dry matter content not exceeding 65% by weight, adjusting the pH of the resulting concentrated solution to a value of 6.0 to 6.4 and finally heating the solution to a temperature of 90° to 100°C for at least 15 minutes.

3,881,023

FLEXIBLE COOKING CONTAINER HAVING POWDER DISTRIBUTED OVER ITS INTERIOR SURFACES

Calvin L. Wilson, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed May 11, 1972, Ser. No. 252,164

Int. Cl. B65b *25/22*

U.S. Cl. 426—132 **21 Claims**

1. A container for enclosing an article of food during cooking thereof, comprising flexible sheet material resistant to temperatures exceeding 325°F. and treated so as to minimize danger of eruptions during cooking by having distributed over the interior surfaces thereof a small quantity of an edible powder that at a cooking temperature of 325°F. is solid and insoluble in water, said container being devoid of said article of food.

3,881,024

EXTRUDED RUMINANT FODDER COMPRISING FIBROUS PLANT MATERIAL AND GELATINIZABLE BINDER

James T. E. Pahoundis, Sr., North Ridgeville; Maurice A. Williams, Brookpark, and Hans R. Strop, Lakewood, all of Ohio, assignors to International Basic Economy Corporation, New York, N.Y.

Filed Dec. 22, 1972, Ser. No. 317,713

Int. Cl. A23k *1/14*

U.S. Cl. 426—578 **20 Claims**

1. A process for producing a ruminant animal fodder in a single piece of processing equipment which comprises introducing into the processing chamber of an extruder type device:

1. fibrous plant material suitable as roughage for a ruminant animal, and selected from the group consisting of alfalfa, clover, grasses, water hyacinth, cereal plants, low growing leafy plants, plant residues from farming, leaves from large woody trees, aquatic leafy plants, corn stalks, ensilage, regular manure and paunch manure; and
2. a gelatinizable binder selected from the group consisting of:
   a. a starchy material selected from the group consisting of tapioca, wheat, wheat flour, degerminated wheat flour, corn, corn flour, degerminated corn flour, oats, barley, potatoes, cereal seeds, cereal tubers, cereal grain, raw whole corn, whole grain sorghum, hominy feed, wheat red dog, and starches and modified starches derived from such starchy materials;
   b. proteinaceous materials selected from the group consisting of glutens, proteins in cereal grains, oil seeds, plant leaves and stems, milk product proteins, proteinaceous residues of plants and animals such as hide glue and flake glue, and proteins and modified proteins derived from such proteinaceous materials; and
   c. minerals selected from the group consisting of silicates, bentonite and kaolin;

said binder being introduced in its non-gelatinized condition and in an amount representing from about 3 to 50 weight percent of the mixture of plant material and binder on a dry basis, the resulting mixture consisting essentially of fibrous plant material and gelatinizable binder, said mixture containing at least about 50 weight percent of fibrous plant material and having a moisture content of about 20 to 75 percent and, without introducing additional moisture into said chamber, subjecting the mixture of plant material and binder to a temperature between about 100° and 230° F. and a pressure between about 50 and 1,500 p.s.i. in the chamber, without permitting the temperature of the mixture to rise above about 230° F. in the chamber, to gelatinize the binder in the chamber in the presence of the fibrous plant material and mix the plant material with the gelatinized binder to form an extrudable fluid mass within the chamber, and extruding the fluid mass to form the fodder, without flashing to vapor substantial amounts of the liquid associated with said fluid mass, thereby producing a fodder product which is in a substantially non-expanded condition.

3,881,025

AROMATIC COMPOSITIONS

Ivon Flament, Geneva, Switzerland, assignor to Firmenich S.A., Geneva, Switzerland

Filed Mar. 6, 1972, Ser. No. 232,279

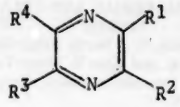
Claims priority, application Switzerland, Mar. 9, 1971, 3396/71

Int. Cl. A23l *1/26;* **A24b** *15/00*

U.S. Cl. 426—537 **16 Claims**

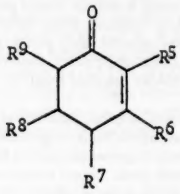
1. A process for improving, enhancing or modifying the organoleptic properties of foodstuffs, feedstuffs, beverages, pharmaceutical preparations and tobacco products which comprises adding thereto a small but effective amount of a flavouring composition comprising at least one compound

having the formula



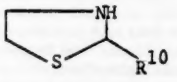
I

wherein (1) the substituents R^1, R^2, R^3 and R^4 each represent a hydrogen atom, an aliphatic hydrocarbon radical, or a cyclic hydrocarbon radical; (2) R^3 and R^4 together represent a benzene ring and R^1 and R^2 are as defined in sub (1); or (3) one of the radicals R^1, R^2, R^3 and R^4 represents an acyl radical and each of the other radicals is as defined in sub (1); at least one compound of formula



II

wherein the substituents R^5, R^6, R^7, R^8 and R^9 each represent a hydrogen atom, an aliphatic hyrocarbon radical, or a cyclic hydrocarbon radical; and at least one compound of formula



III

wherein R^{10} represents a hydrogen atom, an aliphatic hydrocarbon radical, a cyclic hydrocarbon radical, or an aromatic or araliphatic hydrocarbon radical.

3,881,026

POWDERED WATER-INSOLUBLE POLYMERS CONTAINING ABSORBED ADDITIVES

Thomas T. Shepherd, Hopwell, and Francis E. Gould, Princeton, both of N.J., assignors to National Patent Development Corporation, New York, N.Y.

Division of Ser. No. 32,404, April 27, 1970, which is a continuation-in-part of Ser. Nos. 567,856, July 26, 1966, Pat. No. 3,520,949, and Ser. No. 650,259, June 30, 1967, abandoned, Division of Ser. No. 654,044, July 5, 1967. This application June 14, 1971, Ser. No. 153,043The portion of the term of this patent subsequent to Aug. 1, 1989, has been disclaimed.

Int. Cl. A23l *1/26*

U.S. Cl. 426—223 **5 Claims**

1. A powder for controlled release of an additive upon incurring wetting with water or alcohol prepared by the process of grinding to a powder a hard, friable foam of a water-insoluble polymer of a monoester of the group consisting of hydroxyethyl acrylate, hydroxypropyl acrylate, hydroxyethyl methacrylate and hydroxypropyl methacrylate having absorbed therein after polymerization of an additive, said polymer being substantially completely polymerized in a water-free state.

4. A powder according to claim 3 wherein the flavoring agent or fragrance agent is an essential oil.

3,881,027

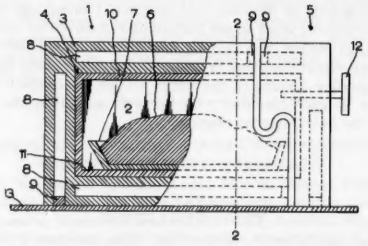
METHOD OF MICROWAVE BAKING

Melvin L. Levinson, 1 Meinzer St., Avenel, N.J. 07001

Division of Ser. No. 193,940, Oct. 29, 1971, Pat. No. 3,731,037, and a continuation-in-part of Ser. Nos. 470,809, July 9, 1965, abandoned, and Ser. No. 483,144, Aug. 27, 1965, abandoned. This application Jan. 22, 1973, Ser. No. 325,330

Int. Cl. A23l *1/00*

U.S. Cl. 426—234 **7 Claims**



1. A method of baking a foodstuff in a microwave oven which includes the steps of:

locating within said microwave oven a baking chamber defined by a first microwave-permeable, heat-insulating material and heated by a second microwave-absorptive material,

exposing to microwave energy said baking chamber for a predetermined time while said microwave-absorptive material absorbs and converts said microwave energy to heat energy which heat energy heats said baking chamber, and subsequently

placing said foodstuff into said heated baking chamber for a predetermined time to bake said foodstuff.

3,881,028

PARTIALLY GELATINIZING POTATO PIECES BY A MICROWAVE HEAT TREATMENT PRIOR TO DEEP FAT FRYING

Anthony C. Capossela, Jr., Tarrytown, N.Y.; John F. Halligan, Greenwich, Conn., and Leslie S. Makaron, Munsey, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Dec. 18, 1970, Ser. No. 99,681

Int. Cl. A23l *1/12; A23b 7/03*

U.S. Cl. 426—242 **11 Claims**

1. A process for forming shelf stable, dehydrated, french fried type potato capable of rehydration with water comprising the steps of:

a. obtaining potato pieces;

b. subjecting said potato pieces to microwave heating, prior to placing them into a deep-fat frying medium, for a time period sufficient to cause partial gelatinization of the starch present in the potato pieces but insufficient to cause a water loss in excess of 3% by weight;

c. then placing the potato pieces into a deep-fat frying medium and deep-fat frying them for a period of time sufficient to cause an additional moisture loss of at least about 50%;

d. removing the potato pieces from the deep-fat frying medium; and

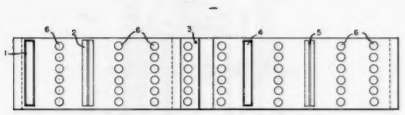
e. heating the fried potato pieces of step (d) for a period of time sufficient to remove excess moisture, said heating resulting in dried potato pieces having an additional moisture reduction of at least about 10%.

3,881,029

METHOD OF PROVIDING HAMBURGER PATTIES THAT DO NOT ADHERE TOGETHER WHILE PACKAGED AND THAT CAN BE EASILY SEPARATED

Simon Weil Arenson, 6602 Copper Ridge Dr., Baltimore, Md. 21209

Continuation-in-part of Ser. No. 299,920, Oct. 24, 1972, abandoned. This application May 8, 1973, Ser. No. 358,315
Int. Cl. A23b *1/00*
U.S. Cl. 426—274 6 Claims



1. A method of preventing the adherence during freezing or during refrigeration of hamburger patties in contact with one another which comprises applying a coating of powdered stearine in an amount effective to prevent adherence during freezing or refrigeration to the contacting surfaces of the hamburger patties, said hamburger patties having a temperature of up to 38° F at the time of being coated.

3,881,030

2,2-DIPHENYL-3,3-DIMETHYLOXETONE INSECTICIDES

George Holan, Brighton, Victoria, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Division of Ser. No. 162,262, July 13, 1971, Pat. No. 3,776,925. This application Aug. 22, 1973, Ser. No. 390,507
Claims priority, application Australia, July 23, 1970, 1945/70; Feb. 5, 1971, 3948/71; Feb. 12, 1971, 4010/71
Int. Cl. A01n *9/12, 9/28*
U.S. Cl. 424—278 6 Claims

1. An insecticidal composition comprising an insecticidally effective amount of a compound selected from the group consisting of 2,2-bis (p-ethoxyphenyl)-3,3-dimethyloxetane, 2-p-ethoxyphenyl-2-p-methoxyphenyl-3,3-dimethyloxetane and 2-p-ethoxyphenyl-2-p-ethylthiophenyl-3,3-dimethyloxetane and a carrier therefor.

3,881,031

METHOD OF PREVENTING GELATION IN CANNED GRAVY-BASED PET FOODS

Martin Glicksman, Valley Cottage, and Elizabeth H. Farkas, Yonkers, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed July 13, 1973, Ser. No. 379,034
Int. Cl. A23l *1/04*
U.S. Cl. 426—325 10 Claims

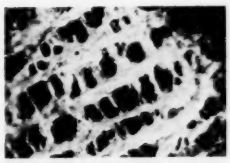
1. A method of preventing gellation during storage in canned proteinaceous products having a liquid and solid proteinaceous phase which comprises adding to the liquid phase an anionic polymer gum selected from the group consisting of gum arabic, gum ghatti, and xanthan gum in an amount effective to inhibit gellation of the liquid phase, canning and sterilizing.

3,881,032

METHOD OF PREPARING FROZEN MINCED FISH MEAT HAVING A STRATIFIED STRUCTURE

Kazuo Matsumoto, and Yoku Fukusaka, both of Tokyo, Japan, assignors to Teigin Limited, Osaka, Japan

Filed Apr. 2, 1973, Ser. No. 347,074
Claims priority, application Japan, July 12, 1972, 47-69036
Int. Cl. A23l *3/36*
U.S. Cl. 426—643 3 Claims



1. A method of preparing a frozen minced fish meat having a stratified structure, said method comprising submitting a minced fish meat containing on a dry weight basis 5 – 10-fold amount of water and on a dry weight basis 0.1 – 0.2-fold amount of sodium chloride, to a first freezing step consisting of passing the minced fish meat through the zone of maximum ice crystal formation at a slow freezing speed such that at least 3 hours are required therefor and thereafter submitting the minced fish meat to a second freezing step at a temperature of the minced fish meat ranging between −25° and −35°C. to complete the freeze.

3,881,033

SOYBEAN PROCESS

Robert L. Steele, Stamford, Conn., assignor to Standard Brands Incorporated, New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,144
Int. Cl. A23l *1/20*
U.S. Cl. 426—385 7 Claims

1. A process for treating soybeans to improve their texture and organoleptic characteristics comprising contacting soybeans with water to affect absorption of water therein, subjecting the hydrated beans to a pressure treatment to soften the beans, subjecting the beans to reduced temperatures to freeze the absorbed water and subjecting the beans to reduced pressures to sublimate at least a portion of the frozen water from the beans.

3,881,034

RECONSTITUTED EGG PRODUCT AND METHOD OF PREPARING

Ezra Levin, Champaign, Ill., assignor to VioBin Corporation, Monticello, Ill.

Continuation-in-part of Ser. No. 702,174, Feb. 1, 1968, Pat. No. 3,607,304. This application Aug. 9, 1971, Ser. No. 170,032The portion of the term of this patent subsequent to Sept. 21, 1988, has been disclaimed.
Int. Cl. A23l *1/32;* A23b *5/02*
U.S. Cl. 426—541 21 Claims

16. In the process of producing a substantially water-free, nutritious egg product in which raw eggs are mixed with an organic liquid fat solvent which forms an azeotrope with water, the water removed by distilling off the solvent-water azeotrope, and the fat of the egg extracted with an organic liquid fat solvent to obtain a substantially water-free egg product containing at least trace amounts of organic liquid fat solvent, the improvement which comprises mixing said water-free egg product with water and evaporating water and solvent from said egg product and water mixture so as to obtain a substantially dry and substantially solventfree egg product.

3,881,035

MANUFACTURING OF CHEESE

William H. Tate, 118 Hill St., Hannibal, Mo. 63401

Division of Ser. No. 221,645, Jan. 28, 1972, Pat. No. 3,797,380. This application Mar. 12, 1974, Ser. No. 450,391

Int. Cl. A23c 19/02

U.S. Cl. 426—582 4 Claims

1. A method for manufacturing cheese, comprising the steps of:

a. placing curd on a first conveyor, and intermittently conveying same until the curd reaches an end of the first conveyor;

b. permitting the curd to fall from the end of the first conveyor onto a second conveyor positioned below the first conveyor, and intermittently conveying the curd on the second conveyor in a direction of movement opposite to the direction of movement of curd on the first conveyor until the curd reaches an end of the first conveyor;

c. elevating the curd from the end of the second conveyor to the first conveyor, and turning over the curd as same is elevated, the first and second conveyors forming a first closed conveying path;

d. repeating steps (a), (b), and (c) and allowing the curd to stand for sufficient periods between periods of intermittent conveying until the curd knits;

e. transferring the knitted curd from the first conveyor into a chute at the end of the first conveyor;

f. allowing the knitted curd to fall downward in the chute to a third conveyor partially forming a second closed conveying path, and conveying the curd on the third conveyor until it reaches the end of the third conveyor;

g. permitting the curd to fall onto a fourth conveyor positioned below the third conveyor, which fourth conveyor cooperates with the third conveyor to form the second closed conveying path, and conveying the curd on the fourth conveyor in a direction of movement opposite to the direction of movement of curd on the third conveyor until the curd pieces reach an end of the fourth conveyor;

h. elevating the curd from the end of the fourth conveyor to the third conveyor; and

i. repeating steps (f), (g) and (h) until the curd heals.

3,881,036

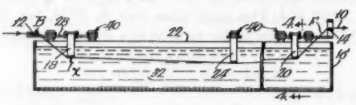
GALVANIZING CONTINUOUS ELEMENTS WITH PREVENTION OF CORROSION OF THE PAN

William H. Brown, 6200 S. Adams St., Bartonville, Ill. 61607

Continuation-in-part of Ser. No. 265,793, June 23, 1972, abandoned, which is a continuation of Ser. No. 106,442, Jan. 14, 1971, abandoned. This application June 25, 1973, Ser. No. 372,981

Int. Cl. C23c 1/00; B05c 3/02; B44d 1/06

U.S. Cl. 427—49 20 Claims



1. In a method of galvanizing an elongated conductive metal element by moving the element lengthwise through a bath of molten zinc in an electrically conductive container from an incoming end to an exit end of the bath, whereby the element is heated by the molten zinc within the bath, the improvement comprising electrically insulating the element from the container, except through the molten zinc.

3,881,037

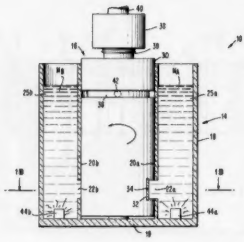
ISOTHERMAL SOLUTION MIXING GROWTH OF SOLIDS

Johannes Grandia, San Jose, Calif.; Robert Martin Potemski, Mohegan Lake, and Jerry McPherson Woodall, Hartsdale, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 84,523, Aug. 17, 1971, abandoned. This application May 15, 1973, Ser. No. 360,518

Int. Cl. H01l 7/00, 7/40

U.S. Cl. 427—87 24 Claims



1. Method for growing a solid structure comprising the steps of:

establishing respective regions of two liquid substances each at thermal equilibrium with respect to a respective solid phase with a related composition at a respective temperature, said liquid substances being different members of a multicomponent compound system with more than two components and with a continuous range of compositions, and when mixed providing a supersaturated solution;

establishing a substrate adjacent one said liquid substance at a solid-liquid interface;

transferring an incremental volume of said one liquid substance adjacent to said substrate at said solid-liquid interface together with said solid thereat to a liquid-liquid interface with said region of said other liquid substance; and

depositing said solid structure with substantially said solid phase composition related to said one liquid substance on said solid-liquid interface by isothermal solution mixing of said incremental volume of said one liquid substance with said region of said other liquid substance which provides a supersaturated solution from which said solid structure is deposited.

3,881,038

LOW TEMPERATURE METALLIZATION OF FERRITE

Ralph J. Bondley, Scotia, N.Y., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed May 7, 1974, Ser. No. 467,682

Int. Cl. B44d 1/16, 1/18

U.S. Cl. 427—156 10 Claims

1. A method for metallizing a ferrite surface having a particular crystal structure which will become damaged when a particular temperature is exceeded, including the steps of:

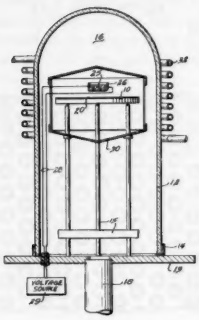
a. depositing a layer of lead upon said ferrite surface;

b. coating said lead layer with titanium hydride;

c. distributing upon said titanium hydride a solder having lead and having a melting point below that particular temperature at which damage to the particular crystal structure will occur;

d. heating said ferrite surface until said titanium hydride decomposes to clean said lead layer of the ferrite surface and until said solder flows uniformly over said lead layer;

and



e. cooling said ferrite surface for a time period sufficient to maintain the particular crystal structure for said ferrite surface.

3,881,039

PROCESS FOR THE TREATMENT OF AMORPHOUS CARBON OR GRAPHITE MANUFACTURED ARTICLES, FOR THE PURPOSE OF IMPROVING THEIR RESISTANCE TO OXIDATION, SOLUTIONS SUITABLE FOR ATTAINING SUCH PURPOSE AND RESULTING PRODUCT

Francesco Baldieri, and Carlo Borgianni, both of Rome, Italy, assignors to Snam Progetti S.p.A., Milan, Italy

Division of Ser. No. 108,739, Jan. 22, 1971, Pat. No. 3,814,699. This application Aug. 21, 1973, Ser. No. 390,196
Claims priority, application Italy, Feb. 23, 1971, 19661/71
Int. Cl. B44d *1/20*
U.S. Cl. 427—294 **5 Claims**

1. Process for giving resistance to oxidation to manufactured articles made of amorphous carbon or graphite, characterized by the fact that:

a. said manufactured articles are degassed and immersed, under vacuum, in a solution obtained by mixing: water; phosphoric acid; one or more compounds selected from the group of salts, oxides and hydroxides of a metal of the 2nd group of the periodic system; one or both components of the group formed by sodium tetraborate decahydrate and boric acid; one or more components selected from the group formed by nitric acid, sodium nitrite, and sodium carbonate; the components of the said solution are mixed in accordance with percentage ratios by weight ranging between 57.0 : 26.0 : 0.1 : 16.9 : 0.0 and 76.0 : 10.0 : 6.0 : 2.0 : 6.0 respectively;

b. the said manufactured articles are impregnated with said solution;

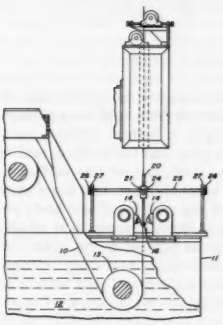
c. the said manufactured articles are allowed to dry and season at room temperature.

3,881,040

METHOD FOR REMOVING EXCESS COATING MATERIAL FROM STRIP EDGES

Robert W. Patterson, Fairfield, Ala., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 247,627, April 26, 1972, abandoned, which is a division of Ser. No. 117,987, Feb. 23, 1971, Pat. No. 3,685,484. This application Apr. 12, 1974, Ser. No. 460,320
Int. Cl. B05c *11/10*
U.S. Cl. 427—349 **4 Claims**



1. In a hot dip process for coating a strip by passing said strip, at a speed less than 150 ft./min., through a bath of coating material, removing said strip vertically from said bath, and controlling the coating thickness and distribution by directing a jet of fluid from a fluid nozzle against the face of the vertically-moving coated strip, the inclination of said jet being variable from normal to said strip to 45° downward, the improvement comprising preventing the formation of whiskers of coating material on the strip edge by contacting the edges of the strip by a mechanical wiper at a point between ½ and 4 inches beneath the point of impact of the fluid jet against said strip, maintaining said wiper in bearing relation against the edge of said strip, so as to continuously remove excess coating material from the strip edge and prevent such excess material from being contacted by the fluid emitted from said fluid nozzle.

3,881,041

MEDIUM FOR HEAT BONDING

Peter Otto Glienke, Baden-Baden, Germany, assignor to Gutermann & Co., Gutach-Breisgau, Germany

Filed July 26, 1973, Ser. No. 382,875
Claims priority, application Germany, Aug. 2, 1972, 2237923
Int. Cl. A41d *27/10*; **B32b** *3/06, 7/14*
U.S. Cl. 428—40 **16 Claims**

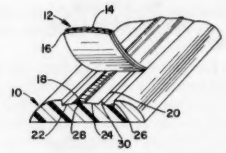
1. A medium for effecting heat bonding between two surfaces of textile fabric material comprising a carrier sheet one side only of which carries layers of a heat bonding substance and of a pressure sensitive adhesive, such layers being arranged that they both present exposed surfaces in a plane substantially parallel to the carrier sheet, the surface carrying the heat bonding substance being such that the heat bonding substance is readily transferable therefrom to the surface of the fabric material to be bonded.

3,881,042

ADHESIVE BARRIER FOR PLASTIC TRIM STRIP

Aaron J. Ungerer, Schenectady, N.Y., assignor to The Standard Products Company, Cleveland, Ohio

Filed Oct. 3, 1973, Ser. No. 403,185
Int. Cl. B44f *1/04*; B60r *13/04*
U.S. Cl. 428—67 12 Claims



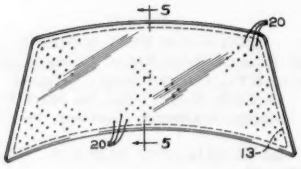
1. A decorative trim strip comprising an elongated body portion of a synthetic resin, said body portion having generally parallel side edges, a bottom surface, and a top surface, a cover strip overlying said top surface, said cover strip having outer and inner surfaces and side surfaces perpendicular to said outer and inner surfaces, said inner surface of said cover strip facing said top surface of said body portion, said cover strip including a film of transparent plastic and a layer of decorative material bonded to the inner surface of said film and visible therethrough, said body portion in the direction between said top surface and said bottom surface being of a thickness greater than the thickness of said cover strip in the direction between said inner and outer surfaces thereof, said inner surface of said cover strip having longitudinally extending marginal edge portions and an intermediate portion laterally therebetween, said marginal edge portions each extending laterally inwardly along the inner surface of said cover strip from the corresponding one of said side surfaces, said marginal edge portions further being parallel to the overlying portion of said outer surface of said cover strip, and means bonding only said marginal edge portions of said cover strip to said top surface of said body portion.

3,881,043

LAMINATED SAFETY WINDSHIELDS

Raymond G. Rieser, Lower Burrell, and Joseph Chabal, Curtisville, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 246,016, April 20, 1972, which is a continuation-in-part of Ser. No. 185,627, Oct. 1, 1971, abandoned. This application Sept. 10, 1973, Ser. No. 395,485
Int. Cl. B32b *17/10*, *27/40*
U.S. Cl. 428—81 15 Claims



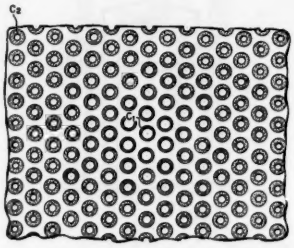
1. In a transparent laminated window comprising a sheet of glass and a layer of polyurethane susceptible of having its adhesion to glass impaired by exposure to moisture, the improvement comprising a pattern of an adhesion promoting coupling agent disposed at the interface between said glass and said polyurethane, said pattern covering a portion only of said interface to provide said portion with a strong adhesive bond between said glass and said polyurethane even when exposed to moisture.

3,881,044

SHADOW MASK FOR USE IN SCREENING A COLOR CATHODE-RAY TUBE

Sam H. Kaplan, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Division of Ser. No. 191,653, Oct. 22, 1971, Pat. No. 3,736,137. This application Apr. 9, 1973, Ser. No. 349,147
Int. Cl. B44d *1/18*
U.S. Cl. 428—131 2 Claims



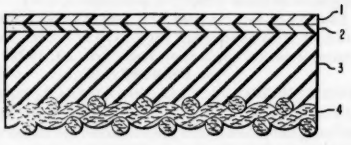
1. An aperture mask useful in the screening of a color cathode-ray tube, comprising a color selection electrode having a pattern of apertures of predetermined individual size and further having a removable, optically opaque coating around the periphery of each of said apertures which varies in thickness between the center and edges of said aperture pattern and which acts to modify the diameter dimension of said apertures such that aperture diameter decreases with increasing coating thickness.

3,881,045

OFFSET PRINTING BLANKET

David W. Strunk, Glocester, R.I., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 24, 1973, Ser. No. 382,174
Int. Cl. B41m *9/02*
U.S. Cl. 428—215 11 Claims



1. An offset printing blanket consisting essentially of
a. 3–10 mils of a void-free printing layer of an elastomeric material having a Shore A hardness of 30–60 durometer firmly adhered to
b. a polyester film about 2–6 mils in thickness having a tensile strength of 20,000 to 180,000 pounds per square inch and firmly adhered to
c. a soft highly resilient void-free rubber backing layer about 20 to 65 mils thick firmly adhered to
d. fibrous backing sheet,
wherein the blanket has a modulus of elasticity of 1 to 4×10^{-7} dynes per centimeter and a Bayshore Resilience of 30–50 percent measured according to ASTM-D-2632-67 and a permanent set of 1–3 percent measured according to ASTM-395-61 Method A.

3,881,046

MAGNETIC RECORDING MEDIUM

Goro Akashi; Masaaki Fujiyama; Yasuyuki Yama, and Tokuaki Miyake, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 186,786, Oct. 5, 1971, abandoned. This application June 21, 1973, Ser. No. 372,369
Claims priority, application Japan, Oct. 5, 1970, 45-87411
Int. Cl. B44d *1/18*; H01f *1/00*
U.S. Cl. 428—216 12 Claims

1. A magnetic recording medium for use in recording short-wavelength comprising a non-magnetizable plastic film support having a magnetizable layer on one side thereof and, on the other side thereof, a first layer having a surface electric resistance of below 1×10^9 ohm and a second layer comprising a pigment that can be easily marked by a marking material and provides easy visual discrimination of a mark produced thereon by said marking material.

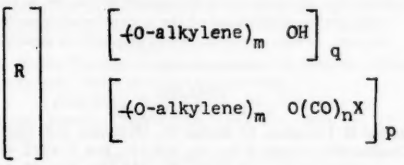
3,881,047

TREATMENT OF FIBRES

Derek James Rowland Massy, Linton; Kenneth Winterbottom, Whittlesford; Albert John Barber, Sale, and James McCartney, Disley, all of England, assignors to Ciba-Geigy AG, Basle, Switzerland

Continuation of Ser. No. 158,555, June 30, 1971, abandoned. This application July 2, 1973, Ser. No. 375,408
Claims priority, application United Kingdom, July 2, 1970, 32241/70
Int. Cl. B44d *1/02*; D06 *13/28*
U.S. Cl. 428—378 24 Claims

1. A process for modifying synthetic fibres which comprises
1. treating the fibres, in the absence of keratinous material, with a polythiol having two to six thiol groups per molecule and a molecular weight between about 400 and about 10,000 wherein the polythiol has the formula



in which
m is a positive integer of at least 1,
n is zero of 1,
p is a positive integer of at least 2 and at most 6,
q is zero or a positive integer of four or less, selected so that (*p*+*q*) equals at least 2 and at most 6,
each 'alkylene' group contains a chain of at least 2 and at most 6 carbon atoms between consecutive oxygen atoms,
R is an aliphatic radical containing at least 2 carbon atoms, and
X is an aliphatic radical containing at least one thiol group and
2. curing the polythiol on the fibres.

16. The process of claim 1, in which the synthetic fibres are selected from the group comprising fibres of nylon, polyester, polyacrylonitrile, and polyvinyl alcohol.

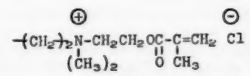
3,881,048

METAL COATED WITH A LUBRICANT COMPOSITION

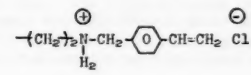
Robert G. Bertrand, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 279,601, Aug. 10, 1972, Pat. No. 3,843,529. This application July 10, 1974, Ser. No. 487,096
Int. Cl. B44d *1/38*; C09d *3/14*
U.S. Cl. 428—447 1 Claim

1. An article comprising a solid metal surface, the surface being coated with a mixture comprising
a. a particulate solid lubricant consisting of a molybdenum disulphide-graphite mixture containing from about 50 to 80 weight percent molybdenum disulphide, the remainder being graphite; and
b. a binder for the solid lubricant particles consisting essentially of about 40 to 60 weight percent carboxymethylcellulose and about 40 to 60 weight percent of an amine-functional silane of the formula $(RO)_3Si-CH_2-_3NHR'$, hydrolyzates and partial condensates thereof in which R is an alkyl radical containing from 1 to 4 inclusive carbon atoms; and R' is selected from the group consisting of the hydrogen atoms, the $-CH_2-_3NH_2$ radical, the



radical and the



radical; the weight ratio of lubricant (a) to binder (b) in the coating being in the range of 1:1 to 3:1.

3,881,049

PROCESS FOR DEPOSITING COPPER LAYERS ON SHAPED ARTICLES OF A POLYIMIDE

Wilhelm Brandt, Wertach, and Irmgard Bindrum, Wiesbaden-Biebrich, both of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Dec. 5, 1972, Ser. No. 312,272
Claims priority, application Germany, Dec. 8, 1971, 2160821
Int. Cl. B44d *1/02*
U.S. Cl. 428—458 25 Claims

1. A polyimide film having on its surface a copper layer which cannot be separated from said surface by mechanical means.

2. A process for depositing a copper layer on a surface of a shaped article of a polyimide, which process comprises
a. treating the surface with a solution of a noble metal salt and about 5 to 25% by weight of a halogenated alkanoic acid, and then drying the surface at a temperature in the range of about 120°to 130°C,
b. treating the surface with a solution including a reducing agent but which does not include a halogenated alkanoic acid, steps (a) and (b) being carried out in either order, and then
c. treating the surface with a solution containing a copper salt and a reducing agent.

3,881,050

COUPLING FOR THE GAS-TIGHT CONNECTION OF TWO SPACEDLY ARRANGED TUBULAR-SHAPED CASING SECTIONS OF GAS-BLAST SWITCHING INSTALLATIONS

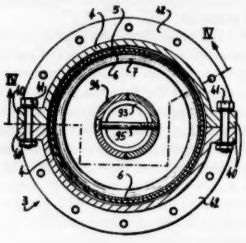
Hans Jäggi, Oberentfelden, Switzerland, assignor to Sprecher a Schuh AG, Aarau, Switzerland

Filed July 2, 1974, Ser. No. 485,315

Claims priority, application Switzerland, July 4, 1973, 9740/73

Int. Cl. H02g *15/08*

U.S. Cl. 174—21 R **9 Claims**



1. A coupling arrangement for the gas-tight connection of two spacedly arranged substantially tubular-shaped casing sections of gas-blast insulated switching installations, the casing sections being provided with outer end flanges, comprising a coupling sleeve having outer end flanges and composed of substantially half shells, said coupling sleeve being secured by means of its outer end flanges to the end flanges of the casing sections, a substantially tubular-shaped jacket seal arranged within the coupling sleeve, said jacket seal having two substantially ring-shaped flange seals formed at its two ends, a support sleeve arranged within the jacket sleeve, said support sleeve comprising half shells, and wherein each flange seal of the jacket seal engages between an end flange of the coupling sleeve and the end flange of the one associated casing section.

3,881,051

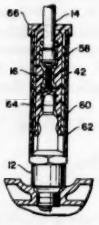
SPARK PLUG BOOT

Norman H. Berry, 49 Cambridge, Pleasant Ridge, Mich. 48069

Filed Mar. 19, 1973, Ser. No. 342,384

Int. Cl. H05k *5/00*

U.S. Cl. 174—35 SM **6 Claims**



1. In combination, a spark plug for an automobile ignition or the like, a spark plug lead wire for high voltage electrical energy, means connecting one end of the lead wire to one end of the spark plug for intermittent transfer of energy from the lead wire to the spark plug, an insulating boot surrounding the one end of the lead wire and the one end of the spark plug, and a conductive shield molded into the boot for suppressing high frequency radiation from the one end of the spark plug and the one end of the lead wire with the spark plug in use, said shield extending through one end of the boot at a plurality of spaced points around the periphery thereof and into contact with the base of the spark plug at a plurality of spaced points around the periphery thereof to provide a ground connection for the shield, said boot being at least a two-piece member including a cylindrical member having one end at the one end of the boot and having the screen molded therein and a cap surrounding the one end of the lead wire and receiving the other end of the cylindrical member.

3,881,052

CABLE FOR TRANSMISSION OF PCM SIGNALS WITH PLURAL INDEPENDENT SIGNAL PATHS

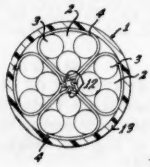
Helmut Britz, Hannover; Georg Maltz, Burgdorf; Gert Niemann, Langenhagen, and Gerd Verdenhalven, Hannover, all of Germany, assignors to Kable-und Metallwerke Gutehoffnungshutte AG, Hannover, Germany

Filed Mar. 20, 1974, Ser. No. 452,941

Claims priority, application Germany, Mar. 23, 1973, 2314498

Int. Cl. H01b *11/06*

U.S. Cl. 174—103 **9 Claims**



1. In a communication cable for the transmission of PCM signals, which includes a plurality of bundles of conductors, the bundles being arranged in a jacket, each bundle of the plurality being individually shielded with respect to the other bundles in the cable, the improvement comprising:

the shield of a bundle of the plurality being a longitudinally folded metal strip having its two longitudinal edges bonded in overlapping abutment, establishing a longitudinal joint of the shield of the bundle, there being but one such joint for each bundle and shield;

all bundles of the plurality being disposed in the jacket, so that the bonded edges of the joint of each bundle are located as near to the center of the cable as possible.

3,881,053

SCANNING SYSTEM

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 224,131, Feb. 7, 1972, which is a continuation-in-part of Ser. No. 142,748, Aug. 28, 1961, Pat. No. 3,646,258, which is a division of Ser. No. 515,417, June 14, 1955, Pat. No. 3,003,109. This application Oct. 10, 1972, Ser. No. 295,807

Int. Cl. H04n *7/18*

U.S. Cl. 178—6.8 **10 Claims**

1. A remotely controlled scanning apparatus comprising in combination:

a television camera operable to scan a field aligned with the optical system of said camera,

support means for supporting said television camera,

means for movably mounting said television camera on said support means,

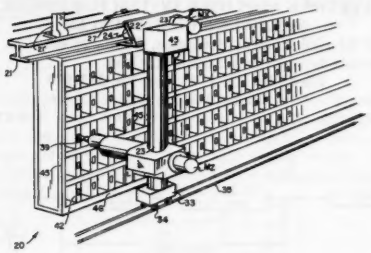
motor means for driving said television camera in a plurality of directions on said support means,

means for operating said television camera to cause it to scan the field aligned therewith and to generate video picture signals which are representative of the optical phenomena scanned by said camera,

a monitor station having a video receiver and a video display means modulatable by the signals received from said television camera for generating visual presentations of the fields scanned by said television camera,.

means for communicating the output of said television camera to said video receiver,

first control means for operating said motor means to effect the movement of said television camera in a first direction on said support means,



second control means for said motor means operable to effect the movement of said television camera in a second direction on said support means,

master control means for activating said first and second control means and means for operating said master control means to cause said motor means to drive said camera in a selected of said first and second directions,

said master control means being operable when said television camera is predeterminately positioned after moving in said selected direction for stopping the movement of said camera to permit said camera to scan along a selected axis defining a predetermined image field and to generate picture signals of the phenomena within said predetermined image field.

3,881,054
METHOD AND CIRCUIT ARRANGEMENT FOR INDEPENDENTLY CONTROLLING THE CONTRAST AND BRIGHTNESS ADJUSTMENT OF AN IMAGE RECEIVER, MORE PARTICULARLY IN VIDEOTELEPHONE SUBSCRIBER STATIONS

Klaus Walla, Gauting, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 26, 1973, Ser. No. 373,735

Claims priority, application Germany, July 5, 1972, 2232994

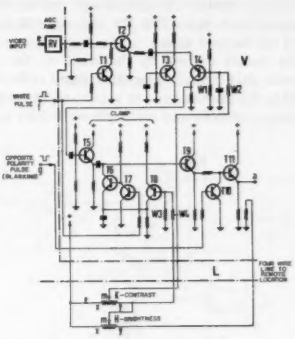
Int. Cl. H04n *5/18, 5/44*

U.S. Cl. 178—7.3 R **10 Claims**

1. A method of independently adjusting the contrast and brightness of an image receiver whereon a picture is projected line by line, particularly in video-telephone subscriber stations, said contrast and brightness controls comprising potentiometers located at a point outside the apparatus; comprising: adding a white pulse to the picture signal during the line blanking interval for each of said lines, the amplitude of said pulse corresponding to the maximum effective voltage for white,

shifting the porch of the white pulse by varying the gain of an amplifier to which the picture signal including said added white pulse is applied by regulating the dc bias thereof by means of said contrast control, the difference between the white-level and the amplitude of the white pulse being left unchanges, and

adjusting the distance between the white level and the amplitude of the white pulse while maintaining said porch substantially constant by varying the gain of said amplifier by regulating the dc bias thereof using said brightness control the desired maximum white level of the picture



being clamped to a level which is an adjustable distance from the amplitude of the inserted white pulse, the porch remaining at substantially the same unclamped value during adjustment of said brightness control.

3,881,055
CIRCUIT ARRANGEMENT FOR SEPARATING SYNCHRONIZING SIGNALS FROM A VIDEO SIGNAL

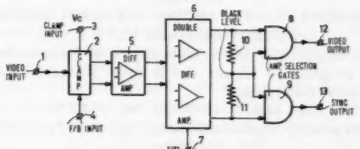
Guy Jean Cyrille Gerot, Nanterre, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 28, 1973, Ser. No. 401,659

Claims priority, application France, Oct. 23, 1972, 72.37496

Int. Cl. H04n *5/08*

U.S. Cl. 178—7.3 S **5 Claims**



1. A method comprising supplying out of phase signals from a composite signal including video and synchronization components, and providing the black level of said composite signal by matrixing said out of phase signals, and providing separated video and synchronization components by amplitude selecting said black level and out of phase signals.

3,881,056
PARABOLIC SOUND REFLECTING MICROPHONE HOLDER

Daniel Armstrong Gibson, 6 Dunloe Rd., Toronto, Ontario, and Robert Justin Ryan, 114 Newport Ave., Scarborough, Ontario, both of Canada

Filed Apr. 2, 1973, Ser. No. 347,056

Int. Cl. H04r *1/34*

U.S. Cl. 179—1 MF **1 Claim**

1. A light weight, hand held sound reflecting parabola and microphone holder assembly comprising:

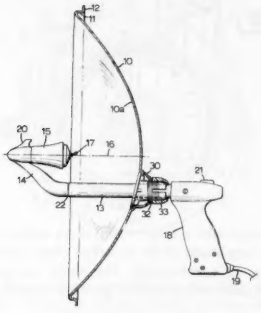
a. a parabolic shell having a sound reflecting surface,

b. a shaft passing through the parabolic shell parallel to but displaced from the parabolic axis, said shaft being adjust-

able in both senses of a direction parallel to the parabolic axis;

c. means carried by the shaft on the side of the parabolic shell adjacent the sound reflecting surface to support a microphone, said means extending from the shaft towards the parabolic axis so that the microphone may be supported on the said axis;

d. handle means carried by the shaft on the side of the parabolic shell remote from the sound reflecting surface to enable the human hand to grasp and support the sound reflecting parabola and microphone holder assembly;



e. the parabolic shell being:

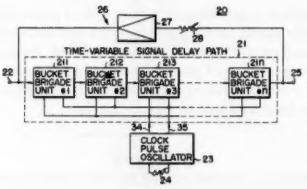
1. circular in a plane normal to the parabolic axis;
2. made of transparent cellulose acetate butyrate plastics material;
3. of a thickness of between about 0.080 and 0.125 inches;
4. of a diameter of the order of about 18 inches; and
5. of a curvature such that its focus lies in a plane containing the rim of the parabolic shell.

3,881,057

REVERBERATION-IMPARTING APPARATUS USING A BUCKET BRIGADE DEVICE

Takeshi Adachi, and Akira Nakada, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Sept. 6, 1973, Ser. No. 394,554
Claims priority, application Japan, Sept. 6, 1972, 47-89287
Int. Cl. H04m *1/21*
U.S. Cl. 179—1 J **16 Claims**



1. In a sound reproducing system so arranged as to impart a reverberation effect to a sound signal from a sound source, a reverberation-imparting apparatus comprising:

a first signal delay path which includes: a bucket brigade device coupled with said sound source to receive the sound signal produced therefrom and including a plurality of bucket brigade units; and a clock pulse oscillator generating a clock pulse signal having a super-audible frequency and coupled with said respective bucket brigade units for imparting a time delay to the sound signal supplied to said bucket brigade device from said sound source, said time delay being determined by the frequency of the clock pulse signal generated by said clock pulse oscillator and the number of said bucket brigade units; and

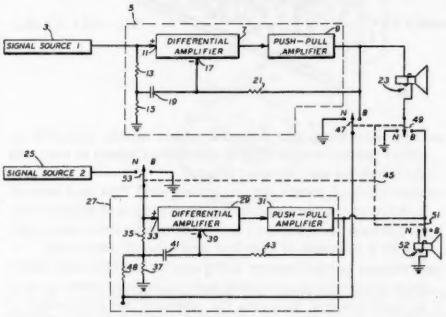
at least one feedback line coupled between the input and output of said first signal delay path, said feedback line including: an amplifier; a loop gain controller coupled to said amplifier; and a second signal delay path of substantially the same construction as said first signal delay path coupled to at least one of said amplifier and loop gain controller.

3,881,058

CONVERTIBLE AMPLIFIER SYSTEM FOR SINGLE AND MULTIPLE SIGNAL SOURCES

David Edward Klauck, Bridgman, Mich., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed May 23, 1973, Ser. No. 363,173
Int. Cl. H03g *1/00*
U.S. Cl. 179—1 A **9 Claims**



1. A convertible amplifier system for single and multiple signal sources comprising:

a pair of loudspeakers;

a pair of operational amplifier means, each having oppositely-phased input terminals; and

switching means for selectively coupling each one of said pair of operational amplifier means to one of said pair of loudspeakers and to a signal source to provide multiple signal response and for coupling the input terminal of one operational amplifier means to a signal source, the input terminal of the other operational amplifier means to a potential reference level, the oppositely-phased input terminal of the other to the output of the one operational amplifier means, and the outputs of the operational amplifier means to a loudspeaker to provide a single signal response.

3,881,059

SYSTEM FOR VISUAL DISPLAY OF SIGNAL PARAMETERS SUCH AS THE PARAMETERS OF SPEECH SIGNALS FOR SPEECH TRAINING PURPOSES

Leslie C. Stewart, Rochester, N.Y., assignor to Center for Communications Research, Inc., Rochester, N.Y.

Filed Aug. 16, 1973, Ser. No. 388,771
Int. Cl. G10l *1/14*
U.S. Cl. 179—1 SP **17 Claims**

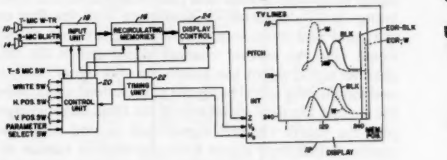
1. A system for providing a graphic display of a parameter which comprises:

a. means having storage for signals corresponding to successive values of said parameter,

b. display means for displaying signals as visible traces on a plurality of lines, one alongside the other in succession, each of said lines having a value corresponding to its position with respect to the other of said lines,

c. means for reading out of said storage means all of said signals concurrently with each of said lines, and

d. display control means responsive to the sum of the value to which each said signal read out of said storage means corresponds and the value corresponding to the position of each line with respect to the other of said lines on said

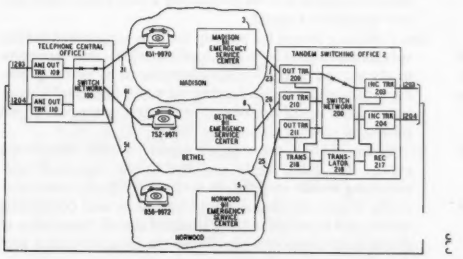


display means for operating said display means to provide a visible trace during read out of each said signal when said sum equals a certain value whereby to provide a sequence of visible traces on said display means which provides said graphic display which represents said parameter.

3,881,060
EMERGENCY REPORTING SYSTEM

Joseph Bernard Connell, Rumson, and Alfred Zarouni, Middletown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 4, 1973, Ser. No. 366,643
Int. Cl. H04m *3/44*
U.S. Cl. 179—5.5 **9 Claims**



1. In a communication system having a plurality of stations each identified by a unique directory number,

a plurality of emergency service centers each assigned a universal number and each designated to serve predetermined ones of the stations,

means for identifying the unique directory number assigned to each one of the calling stations,

means responsive to universal number signals originated by calling ones of the stations for generating directory number signals corresponding to each identified directory number,

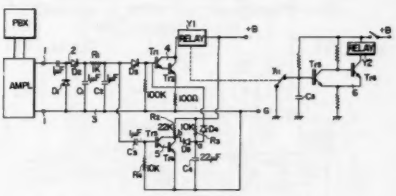
means for receiving the generated directory number signals over a designated path,

means for translating the received directory number signals into routing data identifying ones of the emergency service centers designated to serve the calling stations, and means responsive to the routing data for selectively interconnecting the calling stations with ones of the emergency service centers in accordance with the directory number uniquely assigned each one of the calling stations.

3,881,061
SIGNAL DISCRIMINATOR OF AN AUTOMATIC TELEPHONE ANSWERING APPARATUS

Shizuo Ando, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Ohta-ku, Tokyo, Japan

Continuation of Ser. No. 53,625, July 9, 1970, abandoned. This application Jan. 24, 1973, Ser. No. 326,222
Claims priority, application Japan, July 11, 1969, 44-65204[U]
Int. Cl. H04m *1/64*
U.S. Cl. 179—6 R **5 Claims**



1. A signal discriminator of an automatic telephone answering apparatus, comprising:

a. a rectifier circuit means for rectifying an input signal received from a telephone line,

b. a first monostable switching circuit means coupled to said rectifier circuit means, said first switching circuit means being triggered from a first, stable state to a second state in response to a pulse or other discernible component of a fluctuating input signal received from said rectifier circuit means,

c. first timer circuit means associated with said first monostable switching circuit means said timer circuit means providing a switching signal said switching signal being interrupted for a predetermined period following each triggering of said first monostable circuit means to said second state,

d. second switching circuit means responsive to both the output signal from said rectifier circuit means and said switching signal whereby said second switching circuit means is switched to a first state upon receiving either or both of said signals and to a second state upon receiving neither of said signals, and,

e. a third monostable switching circuit means for controlling the telephone answering apparatus, said third switching circuit means being responsive to actuation of the said second switching circuit means such that when the latter is in said second state said third switching circuit means is triggered from a first state to a second state, and said third switching circuit means returns to its stable first state after said second switching circuit means has been maintained in its first state from a predetermined period.

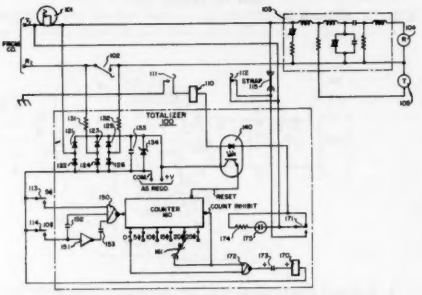
3,881,062
TOTALIZER CIRCUIT FOR COIN OPERATED TELEPHONES

Robert H. Beeman, Berkeley, and Robert V. Burns, Tinley Park, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Oct. 26, 1973, Ser. No. 409,998
Int. Cl. H04m *17/02*
U.S. Cl. 179—6.3 R **9 Claims**

1. A coin operated telephone instrument adapted for connection to a telephone central office by means of a telephone line, including a transmitter, a receiver, a calling device, a coin detecting mechanism normally inhibiting conversation between said instrument and a selected subscriber station of the type requiring deposit of at least one coin in said telephone instrument equivalent in total value to a predetermined value, said coin detecting mechanism operated in response to deposit

of a first coin of any value to condition said instrument for conversation with said selected subscriber station, and a totalizer, said totalizer comprising: counting means electrically advanced once in response to deposit of each coin of a first value and electrically advanced twice in response to deposit of each coin of a second value, said counting means initially operated to generate a first output in response to a first advance and further operated to generate a second output in



response to a predetermined number of additional advances; switching means connected to said counting means initially operated in response to said counting means first output to further inhibit conversation between said instrument and said selected telephone subscriber station, and further operated in response to said counting means second output to permit conversation between said instrument and said selected telephone subscriber station.

3,881,063

SYSTEM FOR SELECTIVELY RECEIVING EITHER 4-CHANNEL OR- 2-CHANNEL STEREOPHONIC BROADCASTINGS

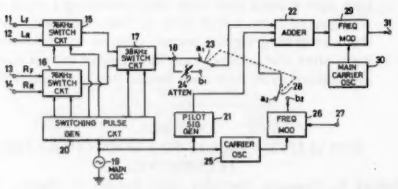
Masaaki Mawake, Zama; Yoshitoshi Fujita, Fujisawa; Teruo Muraoka, Sagamihara, and Teruo Sato, Yamato, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama Japan

Filed Jan. 17, 1973, Ser. No. 324,561

Claims priority, application Japan, Jan. 20, 1972, 47-7878; Jan. 24, 1972, 47-8864; Jan. 29, 1972, 47-10655

Int. Cl. H04h *5/00*

U.S. Cl. 179—15 BT **6 Claims**



1. A system for transmitting either 4-channel signals or 2-channel signals comprising:

main oscillator means for generating a pilot signal having a predetermined frequency;

first oscillator means responsive to the pilot signal for generating a first signal having a frequency which is twice that of the pilot signal;

second oscillator means responsive to the first signal for generating a second signal having a frequency which is four times that of the pilot signal;

composing means;

means responsive to the first and second signals and to first, second, third and fourth channel signals for operating said composing means to produce a first composite signal including a first main channel signal, a first suppressed carrier subchannel signal and a second suppressed carrier subchannel signal, said first main channel signal being a sum signal of the first, second, third and fourth channel signals, said first suppressed carrier subchannel signal having a first carrier of a frequency equal to twice the predetermined frequency and having a first modulating signal modulated on the first carrier and a second modulating signal modulated in quadrature with the first carrier, said first modulating signal being the first channel signal plus the second channel signal minus the third channel signal minus the fourth channel signal, said second modulating signal being the first channel signal minus the second channel signal minus the third channel signal plus the fourth channel signal, said second suppressed carrier subchannel signal having a second carrier of a frequency equal to four times the predetermined frequency and having a third modulating signal modulated on the second carrier, said third modulating signal being the first channel signal minus the second channel signal plus the third channel signal minus the fourth channel signal;

means for also operating said composing means responsive to the first and second signals and to fifth and sixth channel signals for producing a second composite signal including a second main channel signal and a third suppressed carrier subchannel signal, said second main channel signal being a sum signal of the fifth and sixth channel signals, said third suppressed carrier subchannel signal having a third carrier of a frequency equal to twice the predetermined frequency and having a fourth modulating signal modulated on the third carrier, said fourth modulating signal being a difference signal between the fifth and sixth channel signals;

modulating means for modulating the second signal with a program signal which is different from the fifth and sixth channel signals and for producing a non-suppressed carrier subchannel signal;

first switching means for passing the non-suppressed carrier subchannel signal from said modulating means responsive to the second composite signal produced by said composing means and for interrupting the non-suppressed carrier subchannel signal responsive to the first composite signal produced by said composing means;

means for adding the output signal of said composing means, the pilot signal and the output signal of said switching means to produce **4-channel** signals responsive to the first composite signal produced by said composing means and to produce the **2-channel** signals responsive to the second composite signal and the program signal produced by said composing means; and

means for transmitting the output signal of said adding means.

3,881,064

PULSE CODE MODULATION TIME DIVISION SWITCHING SYSTEM

Max Schlichte, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 29, 1972, Ser. No. 293,499

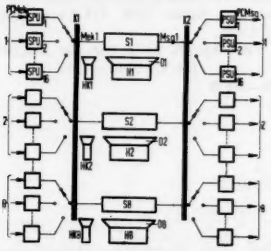
Claims priority, application Germany, Sept. 30, 1971, 2148994

Int. Cl. H04j *3/00*

U.S. Cl. 179—15 AT **5 Claims**

1. In a system for switching serially transmitted, time multiplexed, pulse code modulated signals having means for converting signals on incoming transmission lines from serial to parallel form to facilitate switching operations and means for converting said parallel form signals to serial form prior to transmission on outgoing transmission lines, the improvement comprising:

addressable storage means having fewer storage locations for said pulse code modulated signals than is required for words which can be transmitted during a time frame of a given channel and accessible by all of said transmission

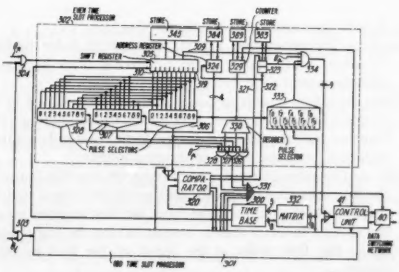


lines for providing a buffer between incoming and outgoing signals and including compensating means for compensating incoming signals when phase differences between incoming signals exceeding the duration of the time channel allocated to each connection.

3,881,065
DEVICE FOR ALIGNING DATA ENVELOPE FORMATS TO PCM WORD FORMATS

Jean-Yves Queffeulou, Route de Ploubezer, 22300 Lannion, France

Filed Mar. 7, 1974, Ser. No. 449,018
Claims priority, application France, Mar. 8, 1973, 73.08354
Int. Cl. H04j *3/06*
U.S. Cl. 179—15 BS **3 Claims**

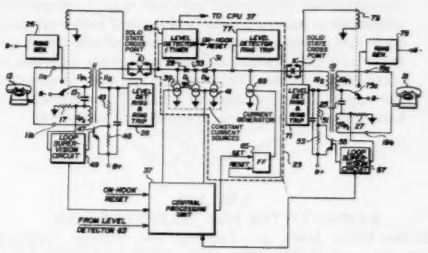


1. A device for phasing up data envelopes containing a number m of bits and starting with an envelope framing bit, the envelopes forming a flow of bits including transmitted envelope framing bits and being passed through a time division switching network adapted to switch n-bit PCM words transmitted in time slots of the consecutive frames of said time division switching network, the number m of bits per envelope being greater than the number n of bits per word and said switching network applying to some of said PCM words a transmission delay equal to an integer number of frames n_f, said device comprising means for serially receiving the flow of bits, means for selectively delaying said flow of bits by delays equal to intervals of 1, 2, . . . $(m-1)$ bits, means for generating a multiframe signal of a length equal to whole numbers of frames and of envelopes, composed of local envelope framing bits distributed from m to m in the length of the multiframe signal, means for comparing the flow of bits containing the transmitted envelope framing bits to the local envelope framing bits; means controlled by said comparing means for varying the delay of said delaying means, means for storing the integer number n_f of frames forming the delay experienced by the PCM words passing through the switching network, and means for applying to the flow of bits an extra delay equal to $(m-n)\times n_f$ intervals of bits.

3,881,066
DC SIGNALING METHOD FOR SOLID-STATE CROSSPOINT NETWORKS

Max S. Macrander, Warrenville, and Ronald F. Kowalik, Lombard, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jan. 2, 1974, Ser. No. 430,277
Int. Cl. H04q *1/28*
U.S. Cl. 179—18 GF **21 Claims**



1. Apparatus for signaling across a solid-state crosspoint matrix network including first and second crosspoint paths comprising:

a source of DC potential;

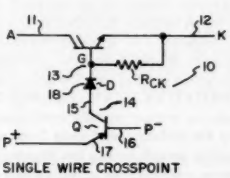
controlled variable impedance means comprising first and second variable impedance networks respectively coupling said first and second crosspoint paths to said DC potential source; and

DC-coupled junctor means intercoupling said first and second crosspoint paths, said DC-coupled junctor means varying the respective levels of DC potential developed at the corresponding junctions of said variable impedance networks and said crosspoint paths responsive to controlled variations in the ratio of the impedances of said variable impedance networks.

3,881,067
ENDMARKING TECHNIQUE FOR SOLID STATE CROSSPOINT NETWORK

Max S. Macrander, Warrensville; Ronald F. Kowalik, Lombard, and Gerald H. Fleischfresser, Chicago, all of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Mar. 4, 1974, Ser. No. 448,107
Int. Cl. H04q *3/50*
U.S. Cl. 179—18 GF **14 Claims**



1. A telephone communication network for connecting any two endpoints of said network comprising:

a multiplicity of crosspoint switching stages, each said stage including a plurality of crosspoint switches and a corresponding plurality of crosspoint switch control means, a given one of said crosspoint switch control means being

associated with a given respective one of said crosspoint switches;

a plurality of transmission links interconnecting said crosspoint switches to provide a matrix of possible transmission paths between any two of said network endpoints;

a plurality of control links interconnecting said control means in corresponding relation to said crosspoint switch interconnection to provide a like matrix of possible control paths having corresponding control path endpoints;

means for establishing an operating potential between a selected pair of said transmission path endpoints; and

means for establishing a control signal between the corresponding control path endpoints coincident with said operating potential establishment between said transmission path endpoints; whereby

when said operating potential and said control signal are coincidentally established between said corresponding transmission path endpoints and control path endpoints, each said control means within said selected path between said selected control path endpoints activates its corresponding crosspoint switch in response to said control signal to thereby establish a unique transmission path between said selected transmission path endpoints.

3,881,068

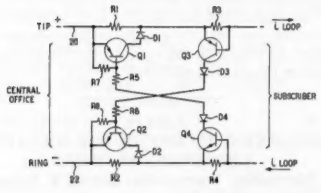
BRIDGE LIFTER FOR TELEPHONE LINE

Charles Elmer Jones, Jr., Fairfield, and William Frederick MacPherson, Warren Twp., Somerset County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed May 16, 1974, Ser. No. 470,623

Int. Cl. H04m *13/00*

U.S. Cl. 179—35 **11 Claims**



1. An electronic bridge lifter adapted for installation in transmission loops multiply connected to a common transmission line and responsive to levels of currents in said loops for isolating idle ones of said loop from said line and providing a low-loss connection to said line for active ones of said loops, CHARACTERIZED IN THAT said bridge lifter comprises:

first impedance means serially connected in a respective said loop for isolating said loop from said line;

semiconductor switch means for shunting said first impedance means with a low-loss path when said switch means is in a closed state, said switch means being in a normally open state; and

loop current measuring means for measuring said level of current in said respective loop and activating said switch means to shunt said first impedance means when said level exceeds a preselected threshold and thereby connect said loop to said line through said low-loss path.

3,881,069

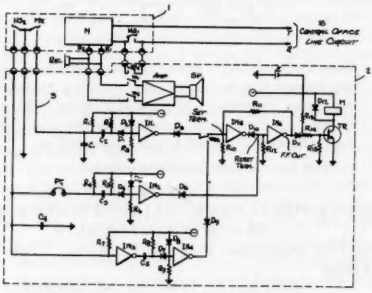
TELEPHONE CALL LOUDSPEAKER MONITORING AND RELAY CONTROL CIRCUIT

Mihikiro Ichikawa, Kawasaki; Kazuyuki Gotoh, Kunitachi, Tokyo, both of Japan, and Stephen E. Kerman, Merrick, N.Y., assignors to Nippon Tsu Shin Kogyo, K.K., Kawasaki, Kanagawa-ken, Japan and TIE/Communications, Inc., Stamford, Conn.

Filed Apr. 5, 1973, Ser. No. 348,286

Int. Cl. H04m *1/60*

U.S. Cl. 179—81 B **9 Claims**



1. A relay operating circuit comprising

a means for generating a first and second pulse of fixed duration, said second pulse occurring after at least a predetermined time delay;

a first inverting circuit means selectively connected to the output of the pulse generating means for producing a first inverted output pulse in response to the first pulse of fixed duration from the pulse generating means;

a second inverting circuit means connected to the output of the first inverting means for producing an output signal in response to the output pulse from the first inverter means, the second inverter means output having the same polarity as the first pulse at the input of the first inverting means;

feedback means connected between the output of the second inverting means and the input of the first inverting means for holding the output of the second inverting means at the level to which it is set by the first inverted output pulse from the first inverting means after the termination of the output pulse from the first inverting circuit;

means, connected to the second inverting means, responsive to the output of the second inverting means, for operating a relay; and

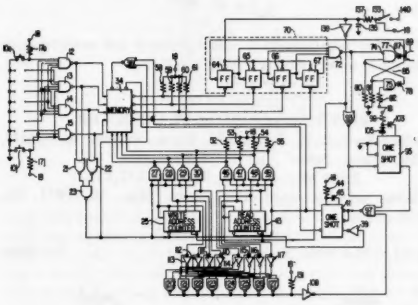
relay contact means connected between the pulse generating means and the first and second inverting means, said contacts responsive to the operation of the relay for selectively disconnecting the input of the first inverting means from the output of the pulse generating means and connecting the second pulse of fixed duration from the pulse generating means to the input of the second inverting means, said pulse resetting said second inverter means to produce an output signal releasing said relay, and thereby reconnecting the output of the pulse generating means to the first inverting circuit.

3,881,070

TRAIN PULSE GENERATOR

Edward J. McCabe, and Donald E. Westphal, both of Wellsboro, Pa., assignors to Mel-Tronix Laboratories Corporation, Mansfield, Pa.

Filed Mar. 1, 1973, Ser. No. 337,190
Int. Cl. H04m *1/30*
U.S. Cl. 179—90 K 9 Claims



1. A pulsing apparatus for generating a plurality of trains of pulses on a telephone line corresponding to selected numbers comprising

a plurality of switches which may be selectively and sequentially operated in accordance with the selected numbers, memory means for receiving and storing representations of a plurality of numbers therein,

means, responsive to operation of any of the plurality of switches, for operating the memory means to store representations of the respective selected numbers in the memory means,

a counter,

means for applying representations of the stored representations, in the same order as stored in the memory means, from the memory means to the counter to produce corresponding sequential counts in the counter,

an oscillator including first and second gate means interconnected to form an astable multivibrator,

means directly responsive to one of the first and second gate means for pulsing the telephone line,

first control means connected to an input of one of the first and second gate means for enabling the oscillator in response to the application of a representation of each stored representation to the counter and for disabling the oscillator after a train of pulses on the telephone line corresponding to each count in the counter have been generated,

second control means, responsive to the first control means disabling the oscillator, for operating the applying means to apply a representation of a stored representation from the memory means to the counter, and

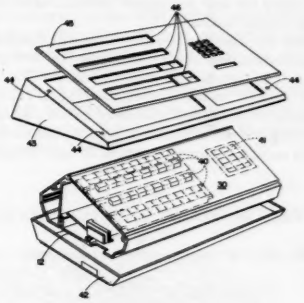
delay means for preventing the operation of the oscillator for a predetermined duration between successive trains of pulses.

3,881,071

HOUSING FOR A TELEPHONE UNIT

Wesley Nelson Willis, and Graham Sterling Laing, both of London, Ontario, Canada, assignors to Bell-Northern Research Ltd., Ottawa, Ontario and Northern Electric Company, Limited, Montreal, Quebec, both of, Canada, a part interest to each

Filed May 7, 1973, Ser. No. 357,595
Int. Cl. H04m *1/02*
U.S. Cl. 179—179 6 Claims



1. A housing for a telephone unit, comprising:

a bottom casing;

a housing base positioned on and fastened to the bottom casing, said housing base comprising a length cut from a metal extrusion and including a bottom web having parallel front and rear edges, front and rear webs extending laterally along and upwardly from said front and rear edges to define a trough shaped member;

a housing top of planar form, comprising a length cut from a metal extrusion, and including front and rear edges;

means slidably and pivotally mounting said housing top at its front edge on a top edge of said front web of said housing base, said means comprising an arcuate groove on one of said front edges of said housing top and said top edge of said front web and a cooperative arcuate web on the other of said front edge and top edge, the locus of said arcuate groove disposed outwardly from said groove relative to said bottom web of said housing base, and cooperative formations on said rear edge of the housing top and a top edge of said rear end of the housing base, said housing base and housing top forming an enclosure open at both ends;

means for mounting circuit members on said housing base and on said housing top;

a top casing positioned over said housing top and said housing base, and cooperating with said bottom casing to form a closed enclosure around said housing top and base;

apertures in said top casing for the reception of circuit members;

the whole so adapted and arranged that on removal of said top casing, said housing top is pivotally movable upward about the front edge of the housing top for access to said circuit members without disconnection of said circuit members or cessation of service by said telephone unit.

3,881,072

AUDIBLE INDEXING FOR DICTATION APPARATUS

Frank E. Becker, 1895 Manassas Dr., Lexington, Ky. 40504

Continuation-in-part of Ser. No. 157,566, June 28, 1971, abandoned. This application June 20, 1973, Ser. No. 371,804
Int. Cl. G11b *27/36, 21/14, 25/04*
U.S. Cl. 179—100.1 DR 2 Claims

1. Dictation apparatus having an indexing arrangement for recording on a record medium audio signals including special

audio signals representative of dictated material said record medium accommodating audio signals recorded thereon in a spiral path comprising a plurality of concentric portions and wherein said audio signals and said special audio signals comprise audio segments that occupy less than one of said concentric portions as well as audio segments that occupy one or more of said concentric portions on said record medium, comprising:

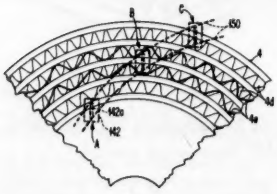
a transducer for recording audio signals;

drive means for relatively driving said record medium and said transducer in proximity with respect to one another in order for said transducer to trace said spiral path on said record medium;

a source of audio signals representative of dictated material;

interconnecting means operable to interconnect said source of signals with said transducer;

mode control means for establishing a record mode of operation to operate said drive means and said interconnecting means in order to record said audio signals on said record medium by means of said transducer;



superimposed signal means operable concurrently with recording of a said special audio signal segment for recording a signal of predetermined constant frequency in superimposed relation with respect to all of said segment;

first control means operable when a special audio segment occupies at least one of said concentric portions to continue operation of said drive means and said superimposed signal means in order to record said superimposed signal only co-extensively with said special audio segment; and

second control means interconnected with said drive means and said superimposed signal means and operable when a special audio segment occupies less than one of said concentric portions on said record medium and following termination of said special audio segment to continue operation of said drive means and said superimposed signal means in order to thereby record said superimposed signal continuously for at least one of said concentric portions even though said audio segment occupies less than one concentric portion of said signal path.

3,881,073

REPLACEABLE STYLUS-LEVER GENERATOR MODULE FOR AN ELECTROMAGNETIC CARTRIDGE

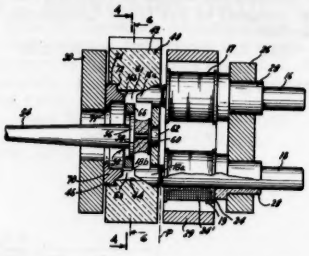
Joseph F. Grado, 4614 Seventh Ave., Brooklyn, N.Y. 11220

Filed Nov. 12, 1973, Ser. No. 414,950

Int. Cl. H04r *11/12*

U.S. Cl. 179—100.41 K **7 Claims**

1. A replaceable module for an electromagnetic cartridge comprising a carrier, first and second pairs of magnetic members mounted in opposing relationship on said carrier and cooperatively positioned to define first and second operating gaps, a stylus-lever operatively mounted on said carrier and extending generally parallel to the length dimension of said operating gaps, a generator operatively mounted on said stylus-lever and positioned in cooperative relation with said first and second pairs of magnetic members to define first and second working gaps of substantially equal length, said gener-



ator moving with respect to said operating and working gaps in response to movement of said stylus-lever.

3,881,074

ELECTRO-ACOUSTIC TRANSDUCER

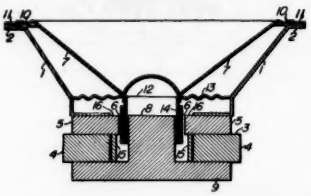
Sinichiro Kawamura, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 6, 1972, Ser. No. 232,142

Claims priority, application Japan, Mar. 10, 1971, 46-15019

Int. Cl. H04r *9/02*

U.S. Cl. 179—115.5 R **9 Claims**



1. An electro-acoustic transducer comprising a pole piece, a yoke having a magnetic pole portion facing said pole piece while defining an annular magnetic flux gap therebetween a magnet magnetically coupled to said pole piece and said yoke, a voice coil inserted in said magnetic flux gap, said voice coil having a large axial length compared with the thickness of said magnetic pole portion of said yoke, an annular conductive short-circuit ring disposed concentrically around said pole piece between said magnet and said pole piece, and a diaphragm operatively connected to said voice coil, whereby the magnetic coupling between said magnet and said pole piece caused by the large axial length voice coil is cancelled by said short-circuit ring.

3,881,075

AUTOMATIC SETTING DEVICE FOR A TIMER

Kiyoshi Kitai, Tokyo, Japan, assignor to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1973, Ser. No. 353,774

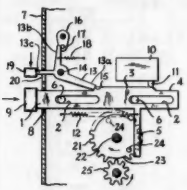
Claims priority, application Japan, Apr. 21, 1972, 47-40114

Int. Cl. H01h *7/08, 43/10*

U.S. Cl. 200—33 R **5 Claims**

1. An automatic setting device for a timer comprising: a slidably mounted operating member manually slidable in one direction along a given path of travel from a reset position to a set position; locking means for releasably locking said operating member in said set position and automatically relocking it when returned to said set position; biasing means continuously biasing said operating member in a direction opposite to said one direction toward said reset position; actuatable switching means disposed along said given path of travel having first and second switching states and coacting with said

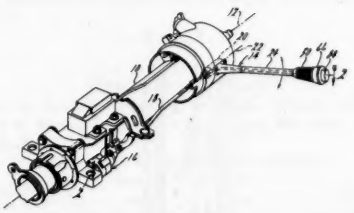
operating member when same is in said set position to switch into said first switching state and coacting with said operating member when same is in said reset position to switch into said second switching state; automatic return means for automatically returning said operating member in said one direction from said reset position to said set position to automatically effect switching of said switching means into siad first switching state, said locking means comprising a pivotally mounted locking lever engageable with said operating member to lock same in said set position and having a first arm manually depressible during use of the device to pivot said locking lever out of engagement with said operating member and a second arm coacting with a timing mechanism during use of the device with a timer to pivot said locking lever out of engagement with said operating member at a preselected reference time, said automatic return means rotatably driven means comprising a main rotary wheel having a pin projecting outwardly therefrom, a driving rotary wheel rotationally driven during use of the device at a constant speed, means for effecting engagement between said main rotary wheel and said driving rotary wheel to transmit the rotary motion of said driving rotary wheel to said main rotary wheel, and an actuating arm connected to said operating member and engageable with said pin during rotation of said main rotary wheel whereby said pin pushes said operating member in said one direction against the force of said biasing spring to automatically return said operating member to said set position.



3,881,076
STEERING COLUMN VEHICLE SWITCH ASSEMBLY HAVING ROTARY AND LINEAL MOVEMENT

Thomas L. Latka, Taylor, and Glenn L. Peck, Jr., Flint, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 12, 1974, Ser. No. 460,656
Int. Cl. H01h *9/00*
U.S. Cl. 200—61.54 **8 Claims**



1. In a vehicle having a steering column, a switch assembly comprising, in combination;

a post mounted on said steering column, said post being pivotal about an axis substantially parallel to the axis of said steering column said post having an arcuate passage extending through it;

a shank coupled to and extending from said post, said shank when moved causing said post to pivot about said post axis, said shank having a passage within it, one end of said shank passage being in alignment with one end of said arcuate passage in said post;

a rod within said shank passage;

handle means coupled to said shank and to said rod, for controlling rotational and longitudinal movement of said rod within said shank passage;

a switch having a housing mounted on said steering column in spaced relation with said post, said switch having a member capable of both rotary and lineal movement relative to said switch housing to change the switching condition of said switch;

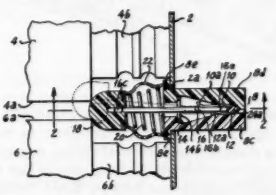
a conduit connected at one of its ends to said switch housing and at its other end to said post, said other end of said conduit being in alignment with the other end of said arcuate passage in said post; and

a flexible cable coupled to said movable switch member and to said rod, said flexible cable extending through said conduit, through said arcuate passage in said post, and into said shank passage.

3,881,077
REFRIGERATOR-FREEZER, TWO-DOOR OPERATED SWITCH

Earl T. Piber, Oconomowoc, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Mar. 11, 1974, Ser. No. 449,906
Int. Cl. H01h *3/16*
U.S. Cl. 200—61.69 **10 Claims**



1. A unitary switch operable by the doors of a double-door cabinet comprising:

an insulating housing arranged for mounting on the cabinet between the doors;

switch contacts within said housing having first and second operating positions;

spring biased switch actuator means extending from said housing for engagement by the adjacent edges of the doors, said spring normally biasing said switch actuator means into an extended position wherein said switch contacts are in said first operating position when both doors are open and disengaged therefrom;

means affording depression of said switch actuator means against the force of its bias spring when both doors are closed into engagement therewith to actuate said switch contacts to said second operating position;

and means affording lateral deflection of said switch actuator means under the force of said bias spring when one of said doors is opened to cause it to clear the other door and to be extended into said extended position to actuate said switch contacts to said first operating position.

3,881,078
DE-ACCELERATION SWITCH OPERABLE BY RELEASE OF FORCE ON ACCELERATOR PEDAL

Paul J. Kazanecki, Brooklyn, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Jan. 15, 1974, Ser. No. 433,541
Int. Cl. H01h *3/14, 13/52*
U.S. Cl. 200—61.89 **1 Claim**

1. An electrical switch which indicates direction of motion of the switch operator rod comprising:

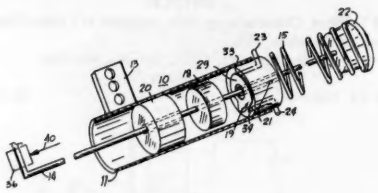
a switch housing fitted with two spaced bearing members which are fixed with relation to each other and to the housing,

a switch operator rod which is slidably mounted to both spaced bearing members so as to slide freely with relation to both spaced bearing members, said operator rod extending beyond the housing in at least one direction,

a pressure member which is mounted on the operator rod between the two spaced bearing members, said pressure member being in frictional engagement with the operator rod so as to be capable of sliding under frictional resistance with relation to the operator rod, and

switch contacts located on one of the bearing members which is of insulated material, so that said contacts are joined to each other when subjected to bearing pressure by the pressure member, said switch contacts being free of electrical contact with each other when not under bearing pressure of the pressure member, such that

motion of the operator rod in one axial direction will move the pressure member against the contacts to cause the switch contacts to close, with motion of the rod in the reverse direction moving the pressure member away from



the contacts causing the switch contacts to open, with said operator rod free to continue to move further in either direction in frictional sliding engagement with the pressure member after setting the switch contacts,

said switch contacts including a fixed contact mounted in one of the spaced bearing members so as to be exposed along the plane of the interior face of said bearing member, and a spring contact member mounted on the interior face of said bearing member, said spring contact member shaped in the general form of a circular washer with one section of the lip of said contact member bent away from the interior face of the bearing member, said spring contact member oriented with respect to the fixed contact member so that the lip of the spring contact member is aligned in the axial direction of the operator rod with the exposed section of the fixed contact member, such that axial pressure of the pressure member against the bent lip of the spring contact member in the direction of the fixed contact member serves to bend the lip to engagement with the fixed contact member, with said lip springing away from engagement with the fixed contact member when the spring contact member is free of engagement with the pressure member.

3,881,079

COMPRESSED-GAS ELECTRIC CIRCUIT BREAKER

Karl Zuckler, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

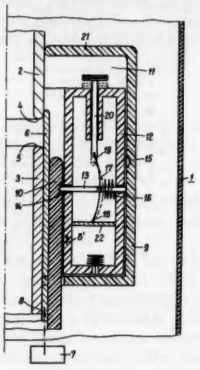
Filed Oct. 25, 1973, Ser. No. 409,705

Claims priority, application Germany, Nov. 3, 1972, 2254515

Int. Cl. H01h *33/70*

U.S. Cl. 200—148 A **4 Claims**

1. An electric compressed-gas circuit breaker switchable between open and closed positions comprising: a switching chamber two switching contacts defining an open gap therebetween when the breaker is switched to the open position, said contacts being disposed in said chamber; switching means for electrically joining said switching contacts in the closed position of the breaker and for electrically disconnecting the same in the open position; and, a gas-blast assembly for blasting a stream of gas through said gap when the breaker is switched to the open position, said gas-blast assembly including: a blast piston member, a blast cylinder member pulled over said blast piston member and disposed in surrounding relation to said switching contacts, drive means for moving one of said members relative to the other one of said members in a first direction to define a compression stroke when the breaker is switched open and for moving said one member relative to



said other member in a direction opposite to said first direction when the breaker is switched closed, an ancillary piston arranged in said blast cylinder so as to be movable along a portion of said stroke, said ancillary piston and said blast piston member conjointly defining a compression surface against which the gas is compressed in said cylinder member during said compression stroke, and latching means for coupling said ancillary piston to said one member in the course of said stroke to cause said ancillary piston to move along with said one member relative to said other member whereby the effective area of said compression surface is reduced.

3,881,080

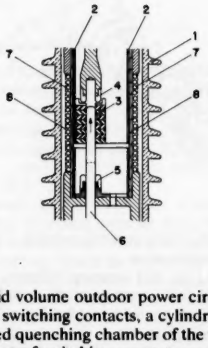
LOW-FLUID VOLUME OUTDOOR POWER CIRCUIT BREAKER

Hans Widmer, Zurich, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Dec. 8, 1971, Ser. No. 206,052

Int. Cl. H01h *33/68*

U.S. Cl. 200—150 R **6 Claims**



1. A low-fluid volume outdoor power circuit breaker comprising a set of switching contacts, a cylindrical insulator tube forming a closed quenching chamber of the fluid medium type in which said set of switching contacts are located, an outer cylindrical porcelain insulator surrounding and spaced radially from said insulator tube, and a cylindrical pressure ab-

sorbing barrier surrounding and in contact with the outer surface of said insulator tube, the pressure waves generated in said fluid quenching medium upon operation of said contacts in switching high order currents produced when switching capacitors being directed against and primarily taken up by said insulator tube whereas the peaks of said pressure waves are damped by absorption within said pressure absorbing barrier thereby to prevent said pressure peaks from reaching the wall of said outer porcelain insulator.

3,881,081

TRIGGER MECHANISM FOR A POWER TOOL

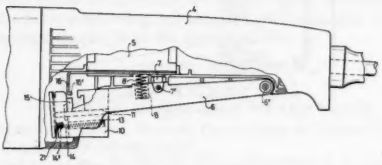
Rainer Schilling, Stuttgart, and Ladislaus Ferenczefy, Leinfelden, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Dec. 12, 1973, Ser. No. 422,597

Claims priority, application Germany, Mar. 30, 1973, 2315841

Int. Cl. H01h *3/20*

U.S. Cl. 200—157 **12 Claims**



1. In a power tool having an electrically energizable drive controlled by a switch and accommodated in a housing, a combination comprising a trigger connected with the switch and mounted on the housing for displacement with respect thereto between a deenergizing position in which the switch is open and an energizing position in which the switch is closed whereby the drive is energized; biasing means urging said trigger toward said deenergizing position; a latch member mounted on said trigger to share the displacement thereof and also for movement with respect to said trigger between a first, a second, and a third position; and means on the housing operative for engaging said latch member when the same is in said first position so as to prevent displacement of said trigger toward said energizing position, for disengaging said latch member when the same is in said second position so as to permit displacement of said trigger against the force of said biasing means toward said energizing position, and for reengaging said latch member when the same is subsequently moved to said third position while said trigger is in said energizing position whereby to lock said trigger in said energizing position.

3,881,082

ASSEMBLY APPARATUS

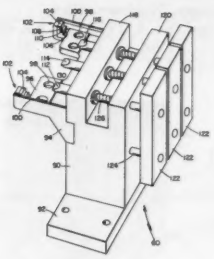
Robert H. Pasquale, Peabody, and John O'Hare, Needham, both of Mass., assignors to The Gillette Company, Gillette Park, Mass.

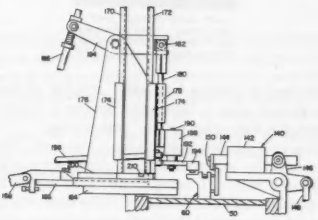
Filed Apr. 29, 1974, Ser. No. 464,820

Int. Cl. B23k *9/12*

U.S. Cl. 219—79 **19 Claims**

1. Apparatus for assembling a blade unit comprising: support structure for receiving and holding in aligned position a first blade component, first aligning structure for applying an aligning force to said first blade component to maintain its cutting edge in predetermined position, second aligning structure for applying an aligning force to a second blade component disposed on said first blade component to maintain its cutting edge in predetermined position offset from the cutting edge of said first blade component, structure for bonding the two blade components permanently together, transfer structure for releasing said aligning forces and transferring the assembled blade unit from the support structure, and common drive structure for operating said aligning, bonding and transfer structures in coordinated relation to align and bond said blade components to form said blade unit.





3,881,083

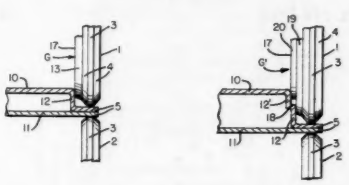
WELDING APPARATUS

Thomas D. Bromley, Anchorage, Ky., assignor to Dever Corporation, Louisville, Ky.

Filed Oct. 23, 1973, Ser. No. 408,567

Int. Cl. B23k *11/06*

U.S. Cl. 219—84 **6 Claims**



1. A welding apparatus including, a rotatable shaft, a rotary electrode wheel rigidly affixed to said shaft to preclude axial and radial displacement relative thereto, said wheel having a peripheral welding surface adapted to be pressure urged against a workpiece provided with a raised portion disposed laterally spaced from that surface of the workpiece intended to be welded by said peripheral surface, a rigid guide disc affixed in a concentric stationary juxtaposed manner to one side of said wheel and provided with an outer face, said disc of non-conductive material and having a circular peripheral surface of a diameter less than that of said wheel peripheral surface, said rigid disc outer face and peripheral surface disposed axially and radially substantially clear of said wheel peripheral surface, whereby, as said electrode wheel peripheral surface engages and travels over said workpiece said disc outer face is urged against said workpiece raised portion to maintain said wheel peripheral surface a constant distance therefrom.

3,881,084
METHOD OF WELDING GALVANIZED STEEL

Edward Lund Baardsen, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 4, 1973, Ser. No. 403,590
Int. Cl. B23k 27/00
U.S. Cl. 219—121 LM 15 Claims

Laser burn-through weld (200 in/min, .5kW) galvanized steel to rimmed steel with Fe0 coating at interface, 50X

1. A method of joining base steel articles, at least one of which is coated with a substance having a vapor pressure higher than the base steel article, comprising:

a. mating said articles along at least one zone thereof,

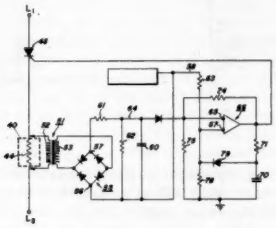
b. locating a flux material at least along one portion of said zone, said material being constituted so as to form a compound with said substance upon high energy heating and said compound having a vapor pressure substantially the same or less than said base steel article, and

c. heating said articles and flux material at least at said zone portion by high energy to provide a weld joint between said articles.

3,881,085
FUSER CONTROL CIRCUIT FOR COPYING APPARATUS

Robert L. Traister, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 312,557, Dec. 6, 1972, abandoned.
This application July 29, 1973, Ser. No. 382,638
Int. Cl. H05b 1/00
U.S. Cl. 219—216 6 Claims



1. In an apparatus for producing copies of documents having a fuser for fixing images produced on the copies together with a heater for heating the fuser, the combination of:

switching means to control power to said fuser heater adapted when in a first switching state to provide power to said heater and when in a second switching state to interrupt power to said heater; and

control means for operating said switching means including first capacitance means adapted on a predetermined charge to switch said switching means to said second state whereby power to said heater is interrupted,

means to charge said first capacitance means in proportion to line voltages across said heater,

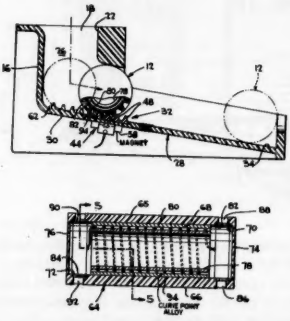
second capacitance means adapted on a predetermined charge to switch said switching means to said first state and provide power to said heater, and

means for charging said second capacitance means in response to switching of said switching means to said second state.

3,881,086
HEATABLE HAIR ROLLER AND HEATING UNIT FOR USE THEREWITH

Eugene T. Fleischhauer, Stamford, Conn., assignor to Clairol Incorporated, New York, N.Y.

Filed Aug. 20, 1973, Ser. No. 389,847
Int. Cl. H05b 1/02; A45d 4/12
U.S. Cl. 219—222 15 Claims



1. A heatable hair roller comprising

a plastic tubular body defining an outer surface for said hair roller and having first and second aperture means therein spaced longitudinally on said body, said aperture means each extending around the circumference of said body;

alloy means having a predetermined Curie temperature disposed in said tubular body; and

electrical heating means in said body in heat transfer relation with said alloy means and including first contact means disposed within said tubular body in alignment with said first aperture means to expose said first contact means in recessed relation to the outer surface of said tubular body and second contact means disposed within said tubular body in alignment with said second aperture means to expose said second contact means in recessed relation to said outer surface of said tubular body to thereby permit electricity to be supplied to said electrical heating means.

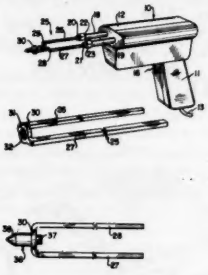
3,881,087
TIP UNIT FOR AN ELECTRIC SOLDERING GUN

Joseph T. Nicosia, Kings Park, N.Y., assignor to Gunmaster Industries Corporation, Mineola, N.Y.

Filed Feb. 22, 1973, Ser. No. 334,720
Int. Cl. H05b 1/00; B23k 3/02
U.S. Cl. 219—233 14 Claims

1. A solder tip holder element for an electrically operated soldering gun, said element formed from a single piece of electrical and heat conductive material of substantially uniform thickness and including as integral and unitary parts thereof a pair of spaced arms joined together at one end thereof by an enlarged central section as the only connecting piece, the other end of each of said arms adapted to be di-

rectly connected to a terminal of the soldering gun to receive current and to thereby pass current through and directly heat said central section, said central section having a bore, and



thread means on the wall of the bore of said central section for detachably connecting and holding a solder tip while transferring heat thereto from the central section.

3,881,088

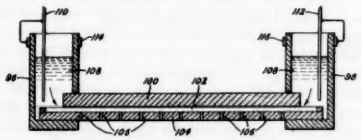
FLOWING VAPOR HIGH POWER LASER

Thomas W. Karras, Berwyn, Pa., assignor to General Electric Company, Fairfield, Conn.

Division of Ser. No. 343,417, March 21, 1973, abandoned. This application May 24, 1974, Ser. No. 473,278

Int. Cl. F22b *1/28*

U.S. Cl. 219—271 **4 Claims**



1. Source and flow means to produce a flow of metal vapor comprising:

h. two containers adapted to contain the said metal;

i. a vaporizer tube having a passageway extending through it which is connected to the interiors of the said containers and which is provided with capillary nozzles which extend through the wall of the said vaporizer tube to its outside;

j. electrical conductors in each said container adapted to make contact with metal contained in the container for passage of electrical current through the said metal and through metal in the said passageway to vaporize it.

3,881,089

HEATSHRINK APPARATUS FOR AUTOMATICALLY PACKAGING GROCERY ARTICLES

Kenneth A. Harkness; D. Mark Kettunen; Paul E. Schirtzinger, and Kenneth A. Vaught, all of Columbus, Ohio, assignors to Kenneth Harkness d/b/a Ideanamics, Columbus, Ohio

Division of Ser. No. 333,561, Feb. 20, 1973, Pat. No. 3,830,036. This application Mar. 7, 1974, Ser. No. 449,054

Int. Cl. F27b *9/06*; **B65b** *53/02*

U.S. Cl. 219—388 **3 Claims**

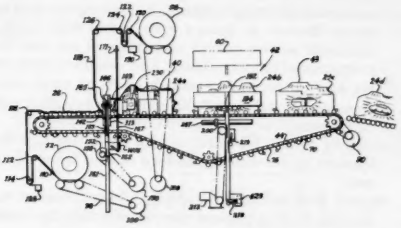
1. A heat shrink apparatus for heating heat shrinkable film surrounding an object and comprising:

a. a perforate support platform on which said object may be positioned;

b. an upwardly radiating electric infrared radiator means mounted below said platform;

c. a carriage mounted for descendable reciprocation around said object;

d. electric infrared radiator means mounted to said carriage for descending and being energized for each descent and for radiating heat energy onto said object and ascending;



e. motor and drive means for at times driving said carriage in descendable and ascendable reciprocation; and

f. a control means connected to said motor and drive means and comprising a radiation responsive temperature detector means aimed to detect the temperature of said infrared radiator means and connected for holding said carriage at its descended position at least until a selected temperature is detected.

3,881,090

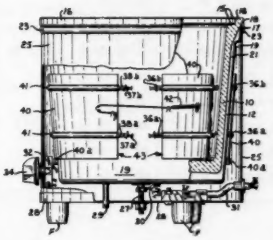
ELECTRIC COOKING UTENSIL HAVING A REMOVABLE CERAMIC VESSEL

Robert J. Scott, Blue Springs, Mo., assignor to Rival Manufacturing Company, Kansas City, Mo.

Filed Dec. 3, 1973, Ser. No. 420,951

Int. Cl. F27d *11/02*

U.S. Cl. 219—433 **2 Claims**



1. An electric non-thermostitically controlled cooking utensil for slow cooking or warming food, said utensil including a vessel comprised of ceramic or earthernware material, said vessel having an annular lip located at the upper end portion thereof and extending radially outwardly therefrom, said vessel further including a generally cylindrical side wall integrally formed with said lip and a bottom wall,

an inner container constructed of material having the ability to conduct heat and having a shape similar to said vessel and sized to permit at least a portion of said vessel to be received within said inner container, the inner container being substantially separated from said vessel by an air chamber located therebetween,

at least one electric heating element operable to supply heat to the utensil contents by heating said inner container, said inner chamber and said vessel, said heating element encircling said inner container and being attached to the exterior surface of said inner container and electrically insulated therefrom,

an outer container being of a size and shape to hold substantially all of said inner container and said vessel therein, said inner container having an upper end portion forming a seal with said outer container, said seal thereby precluding liquid located interiorly of said vessel from reaching said electric heating element while pouring out the contents of said vessel or in the event of said vessel becoming cracked or broken, said lip of said vessel contacting said seal and supporting substantially the entire weight of said vessel thereon in spaced relationship from said inner container so that neither said side wall nor said bottom contacts said inner container, said vessel structure including said lip permitting said vessel to be easily removed from said container without removing any other portions of the utensil or using special tools,

attaching means for securing and attaching said heating element to the exterior surface of said inner container, and

electric lead means for applying electric current to said electric heating element thereby effecting the heating of said heating element.

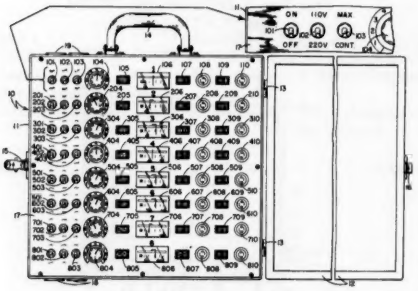
3,881,091
CONTROL FOR INJECTION MOLDING

Charles Leon Day, 11 Main St., Wells, Maine 04090

Continuation-in-part of Ser. No. 169,009, Aug. 4, 1971, abandoned, which is a continuation-in-part of Ser. No. 33,003, April 29, 1971, abandoned. This application Aug. 31, 1973, Ser. No. 393,567

Int. Cl. H05b *1/02*

U.S. Cl. 219—489 **14 Claims**



1. A control device of high precision for use in controlling high current loads, as for example, heating currents for multiple cavity molds in injection molding machines, comprising in a compact enclosure a separate power control for each load, each such control comprising:

a. a solid state, bidirectional conducting device (827) for controlling current flow in two directions through a load;

b. phase-shifting capacitor means (823) connected in parallel to said conducting device (827);

c. variable resistor means (804) connected in parallel to said conducting device (827) and in series with said capacitor means (823);

d. diode means (818) connected across said conducting device (827) for passing high value transient voltages to reciprocal voltages, and

e. switch means (1803) to short out said variable resistor means (804) and provide maximum current through said conducting device (827).

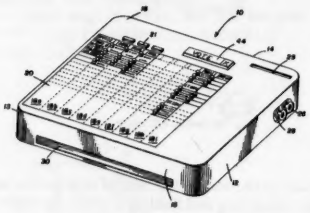
3,881,092
VOTING MACHINE

Cothburn M. O'Neal, 2511 Wedglea Dr., Dallas, Tex. 75211; Alfred M. Mayo, 11125 Ridgemeadow Dr., Dallas, Tex. 75218; George William Childs, deceased, late of Dallas, Tex., and by Patricia M. Childs, executrix, 4216 Calculus Rd., Dallas, Tex. 75234

Division of Ser. No. 309,174, Nov. 24, 1972. This application May 28, 1974, Ser. No. 473,921

Int. Cl. G07c *13/00*

U.S. Cl. 235—54 R **13 Claims**



1. A voting machine comprising:

a plurality of columnar frame members;

a plurality of selection keys arranged in said frame in alignment in vertical columns and horizontal rows, laterally moveable between a first non-voted and second voted position;

tally means actuable by said keys;

vertical interlock means for limiting the number of selections that may be made within a vertical row of keys, said vertical interlock means comprising first cam means associated with said keys including a through bore in said keys, block means vertically interposed between adjacent keys, said block means having a through bore, said block means shiftable from a first position relative to said vertical keys wherein said block means through bores align with the through bores in said keys to a second blocking position, shiftable interlock ball means in said key through bores and associated with said key cam means and said block means through bores, whereby said keys and block means define a continuous ball column in said respective first positions, means for establishing a vertical subcolumn in which a preselected number of vertically aligned keys may be voted, said means including means for shifting preselected block means to said second position to intercept said ball containing column at a predetermined location to establish one limit of the subcolumn and ball receiving means located at the other limit adapted to accept a predetermined number of balls, whereby movement of selected keys to said voted position will cam a predetermined number of additional balls into said ball column and said ball receiving means thereby preventing actuation of additional voting keys when said predetermined number of balls have been caused to move into said ball receiving means;

horizontal interlock means including second cam means carried on said voting keys, horizontally displaceable plunger means associated with said second cam means and actuable whereby movement of a key will cause said second cam means to cam said associated plunger means toward siad adjacent keys, and transfer means for selectively transferring the displacement of said cammed plunger to the plunger associated with said adjacent key to move said adjacent plunger into blocking engagement with its key thereby preventing actuation of said adjacent key;

a drive system including a clearing mechanism for each of said rows of keys, said clearing mechanism including abutment means on said keys, first linkage means in operative engagement with said abutment means and

moveable with said keys and adapted to return said keys to said first non-voted position, power means for said drive system including a drive shaft, clutch means including a driver member connected to said drive shaft and a driven member connected to said first linkage means and adapted to drive same, means for selectively engaging said clutch to actuate said bar to return said keys, registering means actuable by said keys to register voter selections;

said drive system further including a straight party mechanism at selected rows of keys having second abutment means on said keys, second linkage means adapted to engage said second abutment means to move said keys to a voted position, second clutch means including a driver member connected to said drive shaft and a driven member connected to said second linkage means and adapted to drive same; and

means for selectively engaging said second clutch means to actuate said second linkage means.

3,881,093

METHOD OF REGULATION BY SAMPLING PARTIAL PRESSURE OF A GAS MIXTURE CONTAINED IN AT LEAST ONE ENCLOSURE AND A DEVICE FOR THE APPLICATION OF SAID METHOD

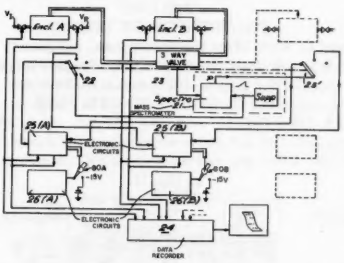
Marcel Andre, Manosque; Bernard Legrand, Aix-en-Provence, and Jean-Marie Montigaud, Perthuis, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed July 3, 1972, Ser. No. 268,891

Claims priority, application France, July 5, 1971, 71.24407

Int. Cl. G01n *7/00, 33/16*

U.S. Cl. 235—150.1 **5 Claims**



1. A method of regulation by sampling the partial pressures of a gas mixture within at least one enclosure containing at least one element modifying said partial pressures, the regulation being performed on said partial pressures independently of each other, wherein each partial pressure is regulated in accordance with either of two types of control, a set-value regulation and variable-value regulation, the set-value regulation having the pressure maintained in the vicinity of a reference value, the variable-value regulation having the pressure varying freely under the effect of modifications caused by the element in the enclosure, up to a predetermined limit beyond which said pressure is restored to a reference value.

3,881,094

SIGNAL FOR EVALUATING SAILBOAT PERFORMANCE

Lucian W. Taylor, Los Altos, and John M. Yarborough, Jr., Palo Alto, both of Calif., assignors to Velcon Filters, Inc., San Jose, Calif.

Filed July 5, 1973, Ser. No. 376,709

Int. Cl. G06g *7/78;* **G06f** *15/50*

U.S. Cl. 235—150.2 **7 Claims**

1. A system for evaluating sailboat performance comprising:

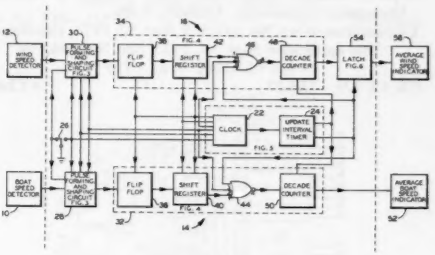
a signal source representing apparent wind direction;

means responsive to said apparent wind direction signal source for producing an average apparent wind direction signal;

a source of a continuous input signal representing apparent wind speed;

means responsive to said apparent wind speed signal source for producing a running average apparent wind speed signal;

a source of a continuous input signal representing boat speed;



means responsive to said boat speed signal source for producing a running average boat speed signal;

means for time delaying said running average apparent wind speed signal relative to said running average boat speed signal to compensate for the effect of the inertia of said sailboat; and

means responsive to said time delayed average apparent wind direction signal, said running average apparent wind speed signal, and said running average boat speed signal for displaying said average signals whereby sailboat performance characteristics can be determined.

3,881,095

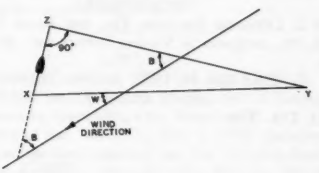
SYSTEM FOR EVALUATING SAILBOAT PERFORMANCE

Lucian W. Taylor, Los Altos, and George J. Eilers, Redwood City, both of Calif., assignors to Velcon Filters, Inc., San Jose, Calif.

Filed Apr. 3, 1973, Ser. No. 347,380

Int. Cl. G06g *7/78*

U.S. Cl. 235—150.2 **16 Claims**



1. A system for evaluating sailboat performance comprising:

a wind detector coupled to the input shaft of a synchro transmitter wherein said wind detector is responsive to the instantaneous apparent wind and said transmitter is responsive to the position of said wind detector for generating a signal representing instantaneous apparent wind direction;

means responsive to said instantaneous apparent wind direction source signal for producing an average apparent wind direction signal;

a signal source representing apparent wind speed;

means reponsive to said apparent wind speed source signal for producing an average apparent wind speed signal;

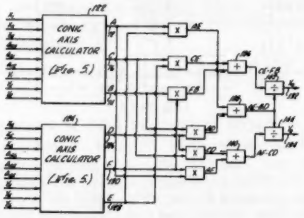
a signal source representing boat speed;
means responsive to said boat speed source signal for producing an average boat speed signal; and
means responsive to said average signals for generating at least one output signal whereby sailboat performance characteristics can be evaluated.

3,881,096

APPARATUS FOR DETERMINING POSITION LOCATION BASED ON RANGE DIFFERENCES

Ralph O. Schmidt, Santa Ana, Calif., assignor to Interstate Electronics Corporation, Anaheim, Calif.

Continuation of Ser. No. 197,361, Nov. 10, 1971, abandoned. This application Sept. 19, 1973, Ser. No. 398,599
Int. Cl. G06g *7/78, 15/50*
U.S. Cl. 235—150.27 **4 Claims**



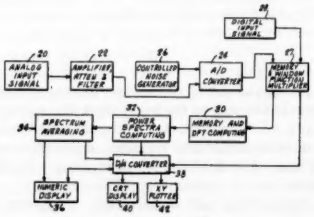
1. Apparatus for determining the position of an unknown location, in response to signals defining the positions of at least three known locations and signals defining the different in distance between said unknown location and pairs of said known locations, comprising:
first computer means responsive to said signals defining positions and said signals defining distance differences for producing signals mathematically defining the axis of a conic bearing a relationship to said known locations, said axis passing through said unknown location; and
second computer means responsive to said signals mathematically defining the axis of a conic for producing signals specifying possible locations on said axis one of which is coincident with said unknown location.

3,881,097

FULLY DIGITAL SPECTRUM ANALYZER USING TIME COMPRESSION AND DISCRETE FOURIER TRANSFORM TECHNIQUES

Joseph L. Lehmann, Sarasota, Fla., and Frank Lynch, Hatboro, Pa., assignors to Weston Instruments, Inc., Newark, N.J.

Filed May 14, 1973, Ser. No. 360,098
Int. Cl. G06f *15/34*
U.S. Cl. 235—156 **27 Claims**



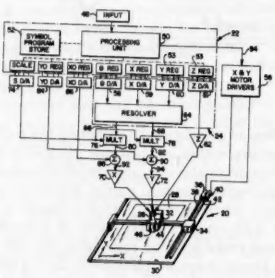
1. A spectrum analyzer comprising:
converter means for receiving an analog signal and for providing successive sequences of N digital words $f(n)$, each word being the n-th sample of a sequence of N successive samples of the analog signal (where $n=1,2,\ldots,N$);
first memory means for storing a sequence of N words provided by the converter means;
window function multiplier means for combining each of the words from the first memory means with a selected window function W(n) to provide a sequence of N words $f(n)\cdot W(n)$;
second memory means for storing the sequence of N words provided by the window function multiplier means;
trigonometric function multiplier means for combining the words from the second memory means with selected trigonometric functions to provide a plurality of series of N words R and N words I, where each R word results from combining a word $f(n)\cdot W(n)$ with a corresponding cosine function of an argument including a value representing a spectral line K, and each I word results from combining a word $f(n)\cdot W(n)$ with a corresponding sine function of an argument including a value representing said spectral line K, said R and I words being respectively the real and imaginary parts of Discrete Fourier Transforms of the sequence $f(n)\cdot W(n)$, each of said plurality of series of R and I words being associated with a different one of a selected plurality of spectral lines K;
means for accumulating, for each of the spectral lines K, the R words and the I words, and means for providing an average value of the N words R and an average value of the N words I; and
means for generating, for each of said spectral lines K, the squares of said average values and for combining said squares to obtain a value representative of the power value for said spectral line K.

3,881,098

PHOTOEXPOSURE SYSTEM

Leonard G. Rich, West Hartford, Conn., assignor to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed July 5, 1973, Ser. No. 376,918
Int. Cl. G06f *15/20;* **G03b** *29/00*
U.S. Cl. 235—151 **16 Claims**



1. A photoexposure system for exposing an artwork on a sheet of photosensitive material, said system comprising means for supporting a sheet of photosensitive material, a cathode ray tube having a face on which luminous symbols may be generated, means for moving an image of said face of said cathode ray tube in two dimensions parallel to the plane of said sheet of photosensitive material to permit the luminous symbol generated on said face to expose any selected area of said sheet of photosensitive material, means providing electrical symbol defining signals commanding the generation on said face of a luminous symbol at a fixed angular orientation relative to said face, and electronic means for converting said symbol defining signals to symbol generating signals which symbol generating signals are supplied to said cathode ray

tube and which cause said luminous symbol to be generated on said face at a selectively variable angular orientation.

3,881,099

PSEUDO-RANDOM BINARY SEQUENCE GENERATOR

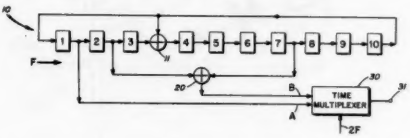
Claude Ailett; Jacques Bigou, both of Lannion, and Yves Bretecher, Perros-Guirec, all of France, assignors to Societe Lannionaise d'Electronique Sle-Citerel, Lannion, France

Filed Dec. 17, 1973, Ser. No. 425,566

Claims priority, application France, Dec. 15, 1972, 72.44868

Int. Cl. G06f *1/02*

U.S. Cl. 235—152 **16 Claims**



1. A binary sequence generator comprising counter means including a plural stage shift register for effecting a cyclic counting at a frequency F, a first sum modulo 2 circuit connected between one pair of stages of said shift register and being also connected to the output of the last stage of said shift register, a second sum modulo 2 circuit having inputs connected to the outputs of other stages of said shift register than those connected to said first sum modulo 2 circuit, and a time multiplexer connected to the output of said second sum modulo 2 circuit and the output of the first stage of said shift register and receiving a multiplexing signal.

3,881,100

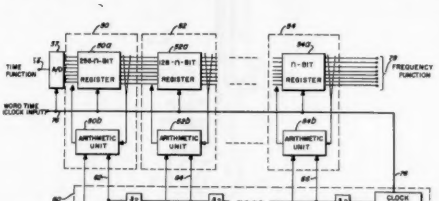
REAL-TIME FOURIER TRANSFORMATION APPARATUS

George A. Works, Wayland, and Harry Vickers, Oakham, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Division of Ser. No. 201,948, Nov. 24, 1971, Pat. No. 3,816,729, which is a continuation of Ser. No. 863,776, Oct. 6, 1969, abandoned. This application Oct. 30, 1973, Ser. No. 411,101

Int. Cl. G06f *15/34*

U.S. Cl. 235—156 **9 Claims**



1. A system for performing a Fourier transform comprising a plurality of serially coupled computational stages, each stage comprising in combination:

means for performing arithmetic operations upon sets of data;

means for storing at least portions of said sets;

means for coupling at least portions of the results of said arithmetic operations upon said sets to said storing means; and said system further comprising single means for controlling each of said coupling means, said controlling means operating independently from any stored set of instructions.

3,881,101

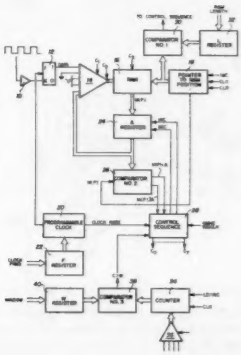
CORRELATOR METHOD AND SYSTEM FOR IDENTIFYING SEQUENCES OF PULSES

Kenneth C. Pederson, Plano; Marshall W. Jobe, Richardson, both of Tex., and Terry R. Stanhope, Ridgecrest, Calif., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 4, 1974, Ser. No. 430,981

Int. Cl. G01s *7/28*; **G06b** *15/34*

U.S. Cl. 235—181 **35 Claims**



1. A correlator for identifying sequences of pulses comprising:

means having a plurality of storage cells for storing representations of pulse occurrences,

means for sequentially addressing said cells at a predetermined rate,

means for initiating a predetermined correlation window interval upon the detection of a pulse occurrence representation in a cell being addressed,

means for detecting the occurrence of a pulse during said window interval to indicate a pulse correlation, and

means for storing representations of said pulse correlation in the storage cell presently being addressed at the time of the pulse correlation.

3,881,102

ELECTRO-OPTICAL SENSING APPARATUS

Samuel P. Willits, and William L. Mohan, both of Barrington, Ill., assignors to Spartanics, Ltd., Palatine, Ill.

Continuation of Ser. No. 7,372, Feb. 2, 1970, abandoned, which is a continuation-in-part of Ser. No. 311,094, Sept. 24, 1963. This application May 30, 1973, Ser. No. 365,096

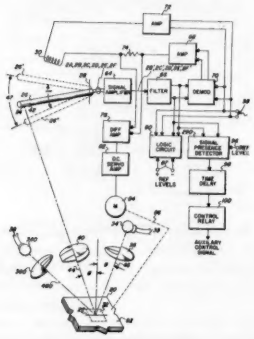
Int. Cl. G05b *1/01*, *1/04*

U.S. Cl. 250—202 **5 Claims**

1. In scanning servo apparatus for sensing the location of an irradiated registration mark relative to the sensor system optical axis of said apparatus to provide an output error signal indicative of said location thereof and for relocating the center of scan of the sensor of said servo apparatus relative to said sensor system optical axis and thereby to the image of said mark in response to said error signals, said scanning servo apparatus including drive coil means, scanning means and signal processing means, said drive coil means being connected to a source of AC power to effect the cyclical oscillation of said scanning means at a fixed amplitude in a direction normal to said registration mark's longitudinal axis and

thereby define a scanned area particularly positioned with respect to said optical axis, said scanning means including a sensor means having signal outputs representative of the location of said registration mark with respect to said scanned area, said signal processing means including amplifier means and fundamental enhancing filter means connected and responsive to the output of said sensor means, said optical axis being defined by and passing through the center of an objective lens and the center of said sensor with said drive coil means unenergized, the improvement comprising the combination of

Phase demodulator means connected to both said fundamental enhancing filter means and to said AC source and



responsive thereto for generating output DC servo error signals indicative of the departure of the center of said scanned area from the image of said mark, and

combining means comprising said drive coil means and first and second DC amplifier means, said means being connected through said first DC amplifier means to said AC power source and through said second DC amplifier means to said phase demodulator means and responsive to the combination of said output DC servo error signals and said AC power source to simultaneously effect said cylical oscillation and a tracking compensating relocation of the center of said scanned area relative to said sensor system optical axis and toward said image of said registration mark.

3,881,103

OPTICAL APPARATUS FOR SELECTIVELY FORMING IMAGES OF DIFFERENT FIELD SIZES IN THE SAME IMAGE PLANE

Josef-Ferdinand Menke, Heidelberg; Gunter Pusch, Eberbach, and Siegfried Roth, Wiesenbach, all of Germany, assignors to Eltro GmbH & Co., Heidelberg, Germany

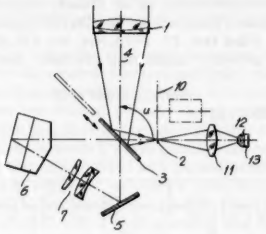
Filed Nov. 27, 1967, Ser. No. 687,958

Claims priority, application Germany, Nov. 25, 1966, 32918

Int. Cl. G02b *27/10*

U.S. Cl. 250—203 R **12 Claims**

1. An optical arrangement comprising an objective adapted for transmitting an image of a remote object along an optical path, controllable means arranged along said path and selectively capable of reflecting the image to an image plane corresponding with the focal plane of said objective or of being transparent to said image, and optical deflection means to receive the image when the controllable means is transparent thereto and to direct the thusly received image to said image



and focal plane with an image field size which is different from that of the reflected image.

3,881,104

STORING OPTICAL RELAY FOR CONVERTING X-RAY IMAGES WHICH COMPRISES AN ELECTRO-OPTIC MATERIAL

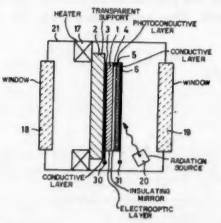
Jacques Donjon, Yerres; Michel Grenot, Brunoy, and Jean-Pierre Hazen, Saint-Maur, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 25, 1973, Ser. No. 382,441

Claims priority, application France, Aug. 2, 1972, 72.27914

Int. Cl. H01j *31/26, 31/50*

U.S. Cl. 250—213 VT **9 Claims**



1. Storing optical relay arrangement for converting X-ray images, comprising at least one source of X-rays, at least one source of visible light, an optical image relay constituted by at least one evacuated enclosure provided with at least one window transparent to X-rays and one window transparent to the visible radiation, a panel of a material which exhibits electro-optic effects, means for raising the panel to a temperature near its Curie point whereby the panel exhibits birefringence which is variable in accordance with a voltage difference applied between its faces, a transparent conductive layer coated on that face of the panel which faces the transparent window, a dielectric mirror on the other face of the panel, a layer of a photoconductive material sensitive to X-rays on said mirror, and an electrically conductive layer on said photoconductive layer which is transparent to X-rays.

3,881,105
APPARATUS FOR DETERMINING THE POSITION OF AN OBJECT IN AN ARBITRARY CROSS-SECTION OF A BEAM OF RADIATION

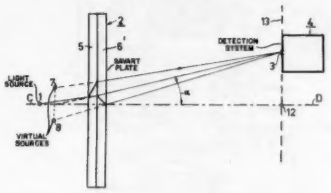
Hendrik De Lang, Emmasingel, Eindhoven, Netherlands, and Rene Dandliker, Zug, Switzerland, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 93,341, Nov. 27, 1970, abandoned. This application Sept. 14, 1973, Ser. No. 397,610

Claims priority, application Netherlands, Dec. 5, 1969, 6918301

Int. Cl. G01n *21/46;* **G02f** *1/18;* **H04b** *7/00*

U.S. Cl. 250—225 **20 Claims**



1. An apparatus for determining the position of an object with respect to a reference position comprising means at said reference position for providing at least two beams of coherent radiation polarized at right angles to one another and having a time dependent complex amplitude difference, both beams illuminating a common area proximate the object, the two beams being spatially separated at the reference position, and a polarization sensitive detection system disposed at the site of the object in the common area.

3,881,106
DEVICE FOR PRODUCING ELECTRICAL SIGNALS BY MEANS OF A CONTROL STICK

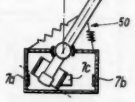
Erwin Pocker, Feldolling, and Gert Grundmann, Westerham, both of Germany, assignors to Messerschmitt-Blokow-Blohm GmbH, Munich, Germany

Filed Jan. 31, 1974, Ser. No. 438,288

Claims priority, application Germany, Feb. 27, 1973, 2309682

Int. Cl. H01j *7/24*

U.S. Cl. 250—234 **9 Claims**



1. A device for producing signals, comprising a control stick having a manipulatable handle portion and being universally pivotally movable to transmit control signals, universal mounting means mounting said control stick for universal pivotal movement, biasing means urging said control stick into a neutral position, transmission means comprising two electrical circuits adapted to be influenced by the angular position of said control stick, a source of luminous radiation mounted on and adjacent an end of said control stick at a spaced location from its pivotal mounting, means associated with said luminous radiation source to shield the photocells from the source in predetermined positions of said control stick, and at least four fixed photosensitive cells arranged in opposed pairs disposed symmetrically about said radiation source and two being connected in each of said two circuits, the center lines of said cells each being in a plane containing the axis of said control stick in said neutral position and being disposed at an angle to each other which is less than 180°.

3,881,107
APPARATUS FOR REGULATING THE POSITION OF A LASER LIGHT SOURCE TRANSMITTING A LIGHT BEAM

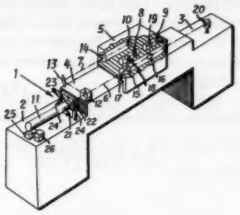
Michael Bory, Zurich, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed Dec. 13, 1973, Ser. No. 426,720

Claims priority, application Switzerland, Dec. 18, 1972, 18412/72

Int. Cl. H01j *3/14*

U.S. Cl. 250—234 **2 Claims**



1. A machine tool including a machine bed, a laser light source, transmitting a light beam, means for supporting said laser for universal movement at one end thereof on said machine bed, adjustment elements engaging with the laser light source at its other end in a plane essentially perpendicular to the light beam and in two directions which are essentially perpendicular to one another, a beam detector fixed on said machine bed and arranged at the path of travel of the light beam for adjusting the position of said laser light source by means of said adjustment elements as a function of the position of the transmitted light beam with regard to said beam detector and to said machine bed.

3,881,108
ION MICROPROBE ANALYZER

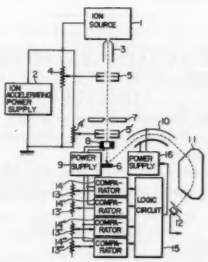
Toshio Kondo, Sagamihara, and Hifumi Tamura, Hachioji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 26, 1973, Ser. No. 409,970

Claims priority, application Japan, Oct. 30, 1972, 47-107951

Int. Cl. H01j *37/26;* **G01n** *23/04*

U.S. Cl. 250—307 **22 Claims**



1. An ion microprobe analyzer comprising means for generating a primary ion beam, means for focusing the generated primary ion beam on a specimen, means for etching the specimen by scanning the focussed primary ion beam over an area

larger than and inclusive of a region to be analyzed on the specimen, at least one means for analyzing information generated from the specimen upon radiation of the primary ion beam thereon, means for detecting an analysis result from said analyzing means, means for setting the region to be analyzed on the specimen, means for comparing an output from said scanning means with an output from said setting means, and means for controlling an output from said analyzing means in response to an output from said comparing means, whereby only information derived from the region to be analyzed on the surface etched by the scanning of the primary ion beam is permitted to be detected to thereby permit accurate measurement of the concentration distribution of an element of the specimen in the depth direction thereof.

3,881,109

SYNTHETIC MATERIALS AND ELECTRICAL AND ELECTRONIC DEVICES MADE FROM THEM

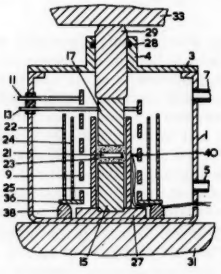
Gordon Robert Jones; Norman Shaw, both of Malvern, and Anthony Worswick Vere, Whyteleaf, near Caterham, all of England, assignors to British Secretary of State for Defence, London, England

Filed Nov. 7, 1973, Ser. No. 413,754

Claims priority, application United Kingdom, Nov. 9, 1972, 51699/72

Int. Cl. G01t *1/16*

U.S. Cl. 250—338 **6 Claims**



1. A pyroelectric detection device comprising a piece of pyroelectric material having a compositional formula $_{1/3}Ge_{3-y}X_yO_{11}$ where y is in the range $0<y$ 2.1 and X is an element selected from group IV of the periodic table but other than carbon, germanium and lead and, electrically connected to said piece, means for detecting the pyroelectric charge developed on said piece when said piece is exposed to a change in temperature by the incidence of electromagnetic radiation on said device.

3,881,110

PENETRATING RADIATION EXAMINING APPARATUS IN COMBINATION WITH BODY LOCATING STRUCTURE

Godfrey Newbold Hounsfield, Newark, and David John Gibbons, Uxbridge, both of England, assignors to EMI Limited, Middlesex, England

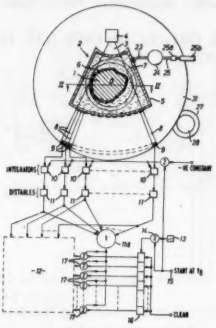
Filed May 10, 1973, Ser. No. 358,980

Claims priority, application United Kingdom, May 17, 1972, 23064/72

Int. Cl. G01n *23/00*

U.S. Cl. 250—360 **6 Claims**

1. Apparatus for examining part of a body by means of penetrating radiation, such as X- or γ- radiation, including a source of said radiation and detector means responsive to said radiation located on opposite sides of the body part, the detector means being arranged to receive radiation emergent from the body, means for orbiting the source and the detector means around the body part, and a locating structure, transmissive of said radiation, for locating the body part relative to the source and detector means, said locating structure comprising a reservoir for a liquid medium transmissive of said radiation, the reservoir having a flexible wall, impervious to said liquid and arranged to surround said body part making



intimate contact therewith and an outer wall arranged to orbit with said source and detector means around the body part and the flexible wall, the locating structure further including a rotary seal, impervious to said liquid, linking said outer and flexible walls to enable the outer wall to orbit around the flexible wall.

3,881,111

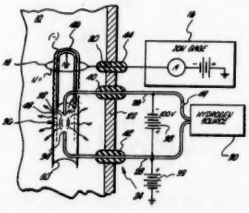
METHOD AND APPARATUS FOR THE DETECTION OF NITRIC OXIDE

James B. Stephens, LaCresenta; Parameswar Mahadevan, Cerritos, and Raymond L. Chuan, Altadena, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Sept. 27, 1973, Ser. No. 401,262

Int. Cl. G01t *1/16*

U.S. Cl. 250—373 **26 Claims**



1. Apparatus for detecting the presence of oxides of nitrogen comprising:

a source of ultraviolet radiation for ionizing oxides of nitrogen illuminated thereby;

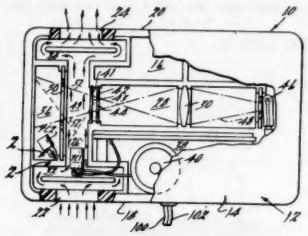
an ion detector positioned to collect ions of said oxides of nitrogen; and

baffle means including first and second sections, said second section positioned for shielding said ion detector from direct incidence of ultraviolet radiation from said source, said first section positioned to electrically shield said second section from said ions of said oxides of nitrogen.

3,881,112
SMOKE AND HEAT DETECTOR UNIT

Gordon A. Roberts, 1509 Kearney Rd., Ann Arbor, Mich. 48103

Continuation of Ser. No. 72,627, Sept. 16, 1970, abandoned.
This application May 17, 1973, Ser. No. 361,128
Int. Cl. G01n 21/26
U.S. Cl. 250—565 13 Claims

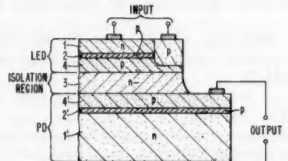


1. In a smoke detector unit, a casing having air inlet and outlet openings, means forming a detection chamber in said casing communicating with said openings, a light energy source providing light in said detection chamber, first photosensitive cell means in said casing positioned to receive light energy deflected from airborne particles in said detection chamber, second photosensitive cell means in said casing for receiving light energy from light therein, means adjustably mounting said second cell means on said casing so that the light energy received by said second cell means may be varied by adjusting its position in said casing, said cell means being arranged relative to said light source such that they have a substantially uniform light intensity thereon at all light levels in said casing, said cell means being disposed substantially adjacent one another so that they are subjected to the same environmental conditions, and signal means operatively associated with said cell means for predetermined actuation in response to a predetermined relationship in the light energies received by said first and second cell means.

3,881,113
INTEGRATED OPTICALLY COUPLED LIGHT EMITTER AND SENSOR

Vincent Leo Rideout, Mohegan Lake, N.Y., and Jerry Macpherson Woodall, Saratoga, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1973, Ser. No. 428,471
Int. Cl. G02f 1/28; H01l 15/00
U.S. Cl. 250—551 10 Claims



1. A bidirectional, integrated, optically coupled isolator comprising:

a light emitting diode of gallium aluminum arsenide semiconductor material,

a photo detector of gallium aluminum arsenide semiconductor material,

an isolation region of gallium aluminum arsenide semiconductor material interposed between said diode and said photo detector said isolation region being highly transparent to light emitted by said diode and wherein said isolation region is $Ga_{0.4}Al_{0.6}As$, wherein said isolation region is semi-insulating and has a doping level of 10^6 atoms/cm^3 and a band gap, E_g, of 2.05 eV.

2. A bidirectional, integrated, optically coupled isolator comprising:

a light emitting diode of gallium aluminum arsenide semiconductor material,

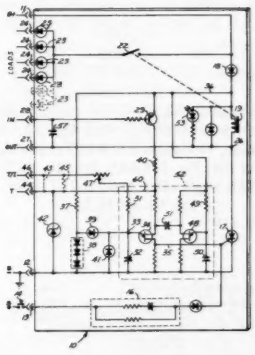
a photo detector of gallium aluminum arsenide semiconductor material,

an isolation region of gallium aluminum arsenide semiconductor material interposed between said diode and said photo detector said isolation region being highly transparent to light emitted by said diode and wherein said isolation region is $Ga_{0.4}Al_{0.6}As$, wherein said isolation region is n-conductivity type and has a doping level of 10^{14} atoms/cm^3 and a band gap, E_g, of 2.05 eV.

3,881,114
ELECTRONIC SEQUENCER

Rodolfo D. Ferrari, 1370-F Logan Ave., Costa Mesa, Calif. 92626

Filed Sept. 11, 1973, Ser. No. 396,199
Int. Cl. H02j 3/00
U.S. Cl. 307—41 13 Claims



1. Apparatus for energizing selected loads in a predetermined sequence and at predetermined intervals of time, comprising:

a plurality of identical electronic modules, each of said modules having an input terminal, an output terminal, and a plurality of load terminals;

means, comprising an electrical connection, for electrically connecting the output terminal of each of said modules to the input terminal of a responsive subsequent module, whereby said modules are joined together in a closed loop circuit, in which each module has a preceding module and a subsequent module;

means, comprising an electrical coupling, for electrically coupling said output terminal of each of said modules to the output terminal of its preceding modules;

means for causing the firing of a selected module to energize said load terminals of that module and produce an output signal at said output terminal;

said electrical coupling being operable to cause said output signal of said selected module to extinguish the module preceding the selected module;

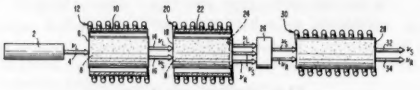
said electrical connection being operable to cause said output signal to activate the module subsequent to said selected module;

whereby each module of said set fires in sequence, and this firing mode steps through the modules of the series.

3,881,115
MULTIPLE QUANTUM LASER

Rodney Trevor Hodgson, Somers; John Robert Lankard, Mahopac, and Peter Pitirinovich Sorokin, White Plains, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,413
Int. Cl. H03f 7/04
U.S. Cl. 307—88.3 **5 Claims**



1. A system for generating stimulated two photon emission comprising

volatile monoiodides in a transparent container,

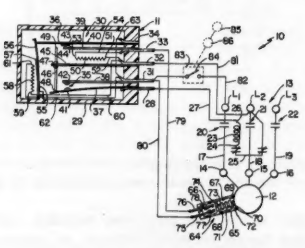
flash photolysis means directed at said volatile monoiodides for achieving large inversions in atomic iodine to an excited state, and

means for generating two intense synchronous pulses ν_1 and ν_2 such that $h\nu_1$ and $h\nu_2$ equals the energy of the excited iodine atoms.

3,881,116
MOTOR CONTROL SYSTEM AND ELECTRICAL SWITCH CONSTRUCTIONS THEREFOR OR THE LIKE

James R. Willson, 94 Golden Hill Rd., Trumbull, Conn. 06611

Division of Ser. No. 216,685, Jan. 10, 1972, Pat. No. 3,787,792. This application Nov. 9, 1973, Ser. No. 414,446
Int. Cl. H01h 35/24
U.S. Cl. 307—118 **5 Claims**

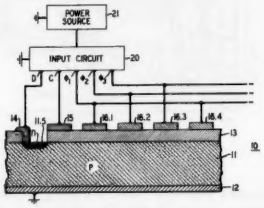


1. In an oil protection system for a motor having a required oil pressure value of the oil in the oil compartment of said motor for safe operation thereof, a pressure responsive switch comprising a housing divided into two separate chambers, one of said chambers having an electrical switch therein adapted to be disposed in one of an open condition thereof and in a closed condition thereof, the other of said chambers having condition responsive means responsive to the oil pressure value of the motor, and means whereby said condition responsive means causing said switch to be in one of said open and closed conditions thereof when said pressure value is below said required value and causing said switch to be in the other condition thereof when said pressure value is above said required value, said other chamber being fluidly interconnected to the low pressure side of said oil compartment and said condition responsive means being interconnected to the high pressure side of said oil compartment.

3,881,117
INPUT CIRCUIT FOR SEMICONDUCTOR CHARGE TRANSFER DEVICES

Michael Francis Tompsett, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 10, 1973, Ser. No. 395,388
Int. Cl. G11c 11/34, 27/00
U.S. Cl. 307—221 D **10 Claims**



1. Control circuitry for a semiconductor signal charge transfer device, having an input source region which can feed charge to an input gate region in turn which can transport charge to a first transfer site in response to applied voltages, which comprises:

a. first circuit means for applying a clock voltage pulse to an electrode controlling the voltage potential at the first transfer site;

b. second circuit means for applying a charge injecting voltage pulse to the input source for a first time period during the duration of the clock voltage pulse sufficient for the transport of a predetermined signal-independent charge from said diode to the first transfer site; and

c. third circuit means for applying a voltage bias plus a signal voltage pulse to an input gate electrode controlling the voltage at the gate region for a second time period which outlasts the clock pulse (which in turn outlasts the injecting pulse), so that an amount of said signal-independent charge is retransported from the first transfer site through the gate region back to the input source subsequently to the first time period but before the termination of the clock voltage pulse in accordance with said signal voltage.

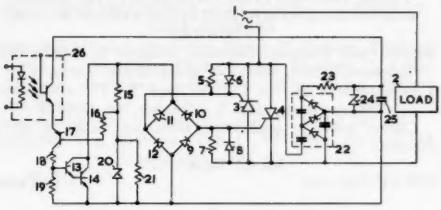
3,881,118
ELECTRONIC SWITCHING CIRCUITS

Robert Henry Forrest, Farnborough, and Reginald John Kingston Splatt, Farnham, both of England, assignors to National Research Development Corporation, London, England

Filed Aug. 17, 1973, Ser. No. 389,160
Claims priority, application United Kingdom, Aug. 25, 1972, 39694/72
Int. Cl. H03k 17/60; H01v 3/00
U.S. Cl. 307—252 UA **6 Claims**

1. An electronic switching circuit for controlling a supply of alternating current electricity to a load comprising: a bi-directional rectifier combination; a bridge rectifier circuit; two resistors each of which is connected between a separate one of the input terminals of the bridge rectifier circuit and a separate one of the main terminals of the bi-directional rectifier combination; at least one electrical connection from an input terminal of the bridge rectifier circuit to a trigger electrode of the bi-directional combination; a switchable semiconductor device having a control current path and a main current path which may be switched to a conductive state by

drawing current through the control current path, the main current path being connected across the output terminals of the bridge rectifier circuit, and a control circuit means for controlling the current in the said control current path characterized in that the control circuit means comprises a transistor whose emitter-to-collector current path is connected in series with the said control current path of the switchable semiconductor device and whose base is connected to receive a full-



wave rectified waveform from the bridge rectifier circuit; a source of direct current voltage; and, first control means for applying a direct current voltage from the said source to the emitter of the said transistor to cause the said transistor to become conductive whenever the said full-wave rectified waveform approaches zero voltage and then to maintain a continuous control current in the control current path of the switchable semiconductor device until the first control means is reset.

3,881,119

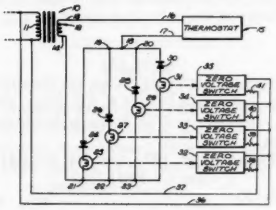
LIGHT SENSITIVE ZERO VOLTAGE SWITCH

Elmer A. Carlson, Agoura, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 345,899, March 29, 1973, Pat. No. 3,815,668. This application Feb. 4, 1974, Ser. No. 439,000

Int. Cl. H03k *17/00*

U.S. Cl. 307—252 T **1 Claim**



1. A light sensitive zero voltage switch comprising: a photosensitive silicon-controlled rectifier (SCR) having an anode, a cathode and a gate; a transistor having collector, emitter and base electrodes; a full wave bridge rectifier; and a triac having first and second sides; first and second output leads connected from said first and second triac sides, respectively, said bridge rectifier including first, second, third and fourth junctions and first, second, third and fourth diodes, said triac having a gate connected from said second side thereof to said first junction, said third junction being connected to said first output lead, said first diode being connected between said first and second junctions and poled to be conductive toward said second junction, said second diode being connected between said second and third junctions and poled to be conductive toward said second junction, said third diode being connected between said third and fourth junctions and poled to be conductive toward said third junction, said fourth diode being connected between said first and fourth junctions and poled to be conductive toward said first junction, said transistor collector and emitter electrodes being connected to said SCR gate and cathode, respectively, said SCR cathode being connected to said fourth junction, a fifth junction, said SCR anode being connected from said fifth junction, said second and fifth junctions being connected together; resistor means connected from said transistor base electrode to said fifth junction; capacitor means connected from said fourth junction to one of said transistor electrodes to inhibit firing of said SCR; sixth, seventh, eighth, ninth, tenth, eleventh and twelth junctions, said resistor means including a first resistor connected between said fifth and sixth junctions, a second resistor connected from said sixth junction to said transistor base electrode a thirteenth junction, a first capacitor connected between said eighth and thirteenth junctions, both of said twelth and thirteenth junctions being connected to said fourth junction, a third resistor connected between said sixth and eighth junctions a unijunction transistor having first and second bases and an emitter, said first and second bases being connected from said eighth and tenth junctions, respectively, a fourth resistor connected from said emitter to said fourth junction, a fifth resistor connected between said seventh and eleventh junctions, said seventh junction being connected to said transistor base electrode, said tenth and eleventh junctions being connected together, a sixth resistor connected between said ninth and tenth junctions, said ninth junction being connected to said second junction, said capacitor means including a second capacitor connected between said eleventh and twelth junctions, said twelth and fourth junctions being connected together.

3,881,120

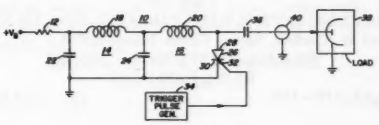
PULSE GENERATING CIRCUIT

Johann M. Osterwalder, San Diego, Calif., assignor to General Dynamics Corporation, St. Louis, Mo.

Filed Dec. 5, 1973, Ser. No. 421,950

Int. Cl. H03k *5/00*

U.S. Cl. 307—260 **14 Claims**



1. A pulse generating circuit adapted to produce a high energy pulse of extremely short duration for actuating a load, such as an antenna, to radiate a high frequency pulse signal, said circuit comprising

a semiconductor device having anode, control and cathode electrodes,

means coupled to said control electrode for triggering said device into conduction,

means coupled to said anode and cathode for producing a plurality of cycles of forward current conduction followed by reverse current conduction through said device, and

means operative after said plurality of cycles occurs for coupling to said load, pulses which result from conduction in said device.

3,881,121

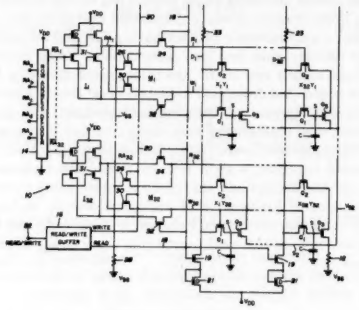
DYNAMIC RANDOM ACCESS MEMORY INCLUDING CIRCUIT MEANS TO PREVENT DATA LOSS CAUSED BY BIPOLAR INJECTION RESULTING FROM CAPACITIVE COUPLING

Robert J. Proebsting, Richardson, and Vernon George McKenny, Garland, both of Tex., assignors to Mostek Company, Carrollton, Tex.

Division of Ser. No. 202,987, Nov. 29, 1971, Pat. No. 3,778,783. This application May 18, 1973, Ser. No. 361,434

Int. Cl. H01l *19/00*; **G11c** *11/40*

U.S. Cl. 307—303 **4 Claims**



1. In a digital data processing integrated circuit utilizing field effect transistors and having a substitute supply voltage and having at least two lines which carry logic levels and which may be capacitively coupled, the improvement comprising circuit means connecting each of the lines to the substrate supply voltage through a common resistive path when both lines are to be at the logic level nearer the substrate supply voltage to thereby reduce transient voltages caused by such capacitive coupling which might cause injection.

2. The integrated circuit of claim 1 wherein there are a plurality of lines capacitively coupled to at least one common line, and all lines are connected through the common resistive path to the substrate supply voltage.

3,881,122

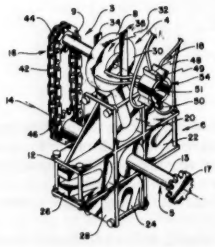
ELECTRIC MOTOR WITH PARALLEL SPACED AXES

Henry W. Carlisle, Spring Grove, Minn. 55974

Filed Aug. 2, 1973, Ser. No. 385,035

Int. Cl. H02k *23/60*

U.S. Cl. 310—115 **13 Claims**



1. A motor comprising:

a first magnetic means in the form of a coil rotatable about a first axis of rotation and excitable by a current source for producing a magnetic field about the first axis having a magnetic axis transverse to the first axis of rotation;

a second magnetic means rotatable about a second axis of rotation for producing a magnetic field about the second axis, the second axis being parallel to and spaced from the first axis for allowing motor reaction between the magnetic fields of the first and second magnetic means; and

connecting means between the first and second magnetic means for maintaining the rotation of the first and second magnetic means in synchronism.

3,881,123

PULSE TRANSMITTER ESPECIALLY FOR BRAKE SLIPPAGE CONTROL INSTALLATIONS IN MOTOR VEHICLES

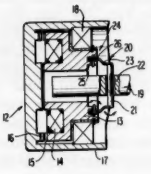
Jürgen Paul, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterurkheim, Germany

Continuation of Ser. No. 177,755, Sept. 3, 1971, abandoned. This application Jan. 2, 1974, Ser. No. 429,818

Claims priority, application Germany, Sept. 4, 1970, 2043842

Int. Cl. H02k *19/29*

U.S. Cl. 310—168 **19 Claims**



1. A pulse transmitter, intended in particular for brake slippage control installations in motor vehicles, in which a rotating part cooperates with a magnetizable non-rotating part by toothed means, and in which the change in magnetic field serves for the detection of the rotary condition of a wheel, characterized by support means accurately supporting the non-rotating part in the rotating part in the radial direction, and joint-like intermediate connecting means connected to one of said two parts to continuously assure concentric rotation of the two toothed means with respect to one another during operation of the pulse transmitter.

3,881,124

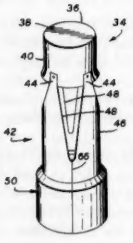
FAST WARM-UP PICTURE TUBE CATHODE SYSTEM

William E. Buescher, and Donald R. Kerstetter, both of Emporium, Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Oct. 24, 1973, Ser. No. 409,041

Int. Cl. H01j *1/02*

U.S. Cl. 313—37 **7 Claims**



1. A fast warm-up cathode assembly for a cathode ray tube comprising; a tubular cap having one closed end and having an axial length less than its diameter; a tubular support of low thermal conductivity for said cap, said support having both ends open and having at least one end substantially the same diameter as said cap and having an axial length greater than

its diameter; means connecting said cap and said support providing poor heat conduction therebetween; and an insulated filamentary heater positioned within said cap and said support, said heater having a coiled section contained solely within said cap and having extending legs within said support and projecting therefrom.

3,881,125

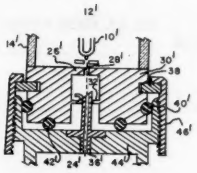
SEPARABLE-CHAMBER ELECTRON-BEAM TUBE INCLUDING MEANS FOR PUNCTURING A PRESSURE SEAL THEREIN

Thompson A. Baker, Beaverton; Melvin M. Balsiger, Portland; Kevin T. Considine, Portland, and Herbert E. Litsjo, Portland, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Division of Ser. No. 281,375, Aug. 17, 1972, Pat. No. 3,809,899. This application Feb. 11, 1974, Ser. No. 441,718

Int. Cl. H01j *1/92, 37/18*

U.S. Cl. 313—237 **8 Claims**



1. An improved electron-beam tube, such improvement comprising:

an evacuated tubular envelope having a separable first chamber and a second chamber, said first chamber being at a predetermined pressure prior to being joined with said second chamber and having a diaphragm at the mounting end thereof to maintain pressure therein; and an interconnecting means for providing communication between said first chamber and said second chamber, said interconnection means including puncturing means for penetrating said diaphragm.

3,881,126

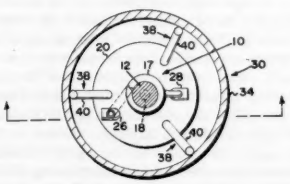
FAST WARM-UP CATHODE ASSEMBLY

Wendell K. Boots, Seneca Falls, N.Y.; William E. Buescher, and Donald R. Kerstetter, both of Emporium, Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Mar. 6, 1974, Ser. No. 448,464

Int. Cl. H01j *1/20, 19/14*

U.S. Cl. 313—337 **7 Claims**



1. A fast warm-up cathode assembly comprising: a solid, heat conductive, elongated core; a widened cathode area affixed to one end of said core; a core support at the other end of said core, said core support extending from said core and being smaller in cross-section than said core; a layer of electron emissive material on said area; and a coiled heater wrapped about said core.

3,881,127

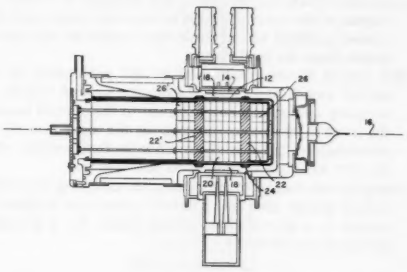
BUCKING SAMARIUM COBALT MAGNETS FOR CROSSED FIELD DEVICES

George H. MacMaster, Lexington, and Kenneth W. Dudley, Sudbury, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 1, 1973, Ser. No. 411,616

Int. Cl. H01j *25/50*

U.S. Cl. 315—39.71 **7 Claims**



1. In a crossed field device having a hollow annular cathode and an annular anode encircling said cathode and spaced therefrom by a distance called the interaction region, the combination comprising:

permanent field magnet means disposed within said cathode providing a magnetic field within said interaction region; and

at least one bucking, permanent magnet near said field magnet for bending back the field lines thereof so that the field in the interaction region increases in strength,

said bucking magnet being located externally of said cathode.

3,881,128

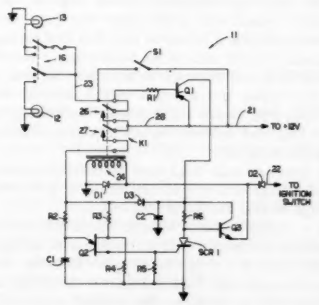
ELECTRICAL LOAD CONTROL FOR A MOTOR VEHICLE

Carl L. Douglas, 1220 Fox Hill Dr., Indianapolis, Ind. 46208; Timothy Smith, 3514 N. Riley Ave., Indianapolis, Ind. 46218, and Richard W. Crenshaw, 1210 Fox Hill Dr., Indianapolis, Ind. 46208

Filed Feb. 20, 1974, Ser. No. 443,966

Int. Cl. B60q *1/02*

U.S. Cl. 315—83 **8 Claims**



1. A power control for an electrical load in a motor vehicle comprising:

a motor vehicle electrical load circuit;

control means, having a control input, a load input and an output, the load input being coupled to a source of electrical power, for coupling its output to its load input when its control input is coupled to a source of electrical power;

a first switch operable in a first position to couple the control input of the control means to a source of electrical power and in a second position to decouple the control input of the control means from a source of electrical power;

a second switch operable in a first position to couple the output of the control means to the load circuit and in a second position to decouple the output of the control means from the load circuit;

first circuit means, responsive to the positioning of the second switch and coupled from the second switch, for coupling a source electrical power to the control input of the control means in response to the condition of the positioning of the second switch in its first position when the first switch is in its second position; and

timing circuit means for precluding the coupling by the first circuit means after the control means has coupled its output to a source of electrical power for a predetermined period of time.

3,881,129

GAS DISCHARGE DEVICE HAVING A LOGIC FUNCTION

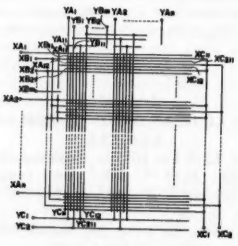
Norihiko Nakayama, Kobe; Hiroshi Furuta, Akashi; Shizuo Andoh, and Toshinori Urade, both of Kobe, Japan, assignors to Fujetsu Limited, Kawasaki, Japan

Filed Dec. 13, 1972, Ser. No. 314,738

Claims priority, application Japan, Dec. 15, 1971, 46-10167

Int. Cl. H05b *37/00*

U.S. Cl. 315—169 TV **7 Claims**



1. A method for controlling a discharge in gas discharge apparatus comprised of first support means for supporting first, second and third electrodes, each disposed in a first direction and covered with a first dielectric layer, said third electrode being disposed between said first and second electrodes; second support means for supporting a fourth electrode spaced from and disposed to traverse said first, second and third electrodes and covered with a second dielectric layer; and envelope means for confining a discharge gas between said first and second dielectric layers; said method comprising the steps of:

applying between said third and fourth electrodes a first control voltage of a magnitude insufficient to produce a discharge in said discharge gas; and

applying a second control voltage selectively to said first and second electrodes, said second control voltage being selected to be of a magnitude higher than the discharge voltage between said first and fourth electrodes and the discharge voltage between the second and fourth electrodes, wherein

said first control voltage impressed between said third and fourth electrodes is selected to be lower than a first lowered discharge voltage established between said third and fourth electrodes when a discharge is produced on only one of said first and second electrodes by said second control voltage, and to be higher than a second, further lowered discharge voltage established between said third and fourth electrodes when a discharge is produced on each of said first and second electrodes by said second control voltage whereby a discharge is produced across said discharge gas between said third and fourth electrodes as a result of the impression of said second control voltage to said first and second electrodes and of said first control voltage between said fourth and third electrodes.

3,881,130

SWITCHING ARRANGEMENT FOR IGNITING SUPPLEMENTARY FLASH LIGHT UNITS

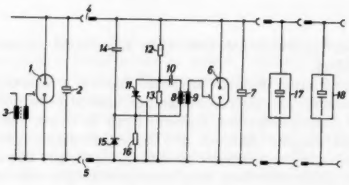
Armin Stiller, Braunschweig, Germany, assignor to Roller-Werke Franke & Heidecke, Braunschweig, Germany

Filed Nov. 26, 1973, Ser. No. 418,843

Claims priority, application Germany, Dec. 1, 1972, 2258834

Int. Cl. H05b *37/00*

U.S. Cl. 315—230 **2 Claims**



1. A supplementary flash light unit for connection by a two-conductor cable to a main flash unit for firing the supplementary unit simultaneously with and as a result of the firing of said main unit, said supplementary unit comprising a first positive high tension conductor for connection to a positive high tension conductor of the main unit, a second conductor negative with respect to said first conductor for connection to a different conductor of the main unit, a flash tube connected between said first and second conductors of the supplementary unit, a storage capacitor connected in parallel with said flash tube, and a firing circuit for said flash tube, said firing circuit including a firing capacitor, a firing transformer, and a thyristor having an anode-cathode path in series with said firing capacitor and firing transformer in a loop circuit, said thyristor having a cathode connected to said first conductor through a capacitor and also connected to said second conductor through a diode and through a resistor in parallel with said diode, said thyristor also having a gate connected directly to said second conductor, said elements being so dimensioned that upon firing a flash tube in a main flash unit to which said supplementary unit is operatively connected, said last mentioned capacitor discharges through said resistor and said diode, thereby causing a change in voltage applied to said thyristor to cause the anode-cathode path of said thyristor to become conductive so that said firing capacitor discharges through the anode-cathode path of said thyristor and through said firing transformer, to cause said firing transformer to provide a pulse to fire said flash tube of said supplementary unit.

3,881,131

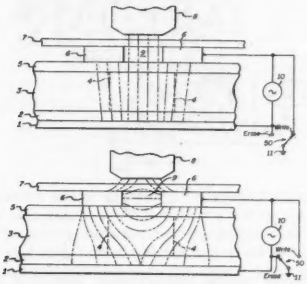
GAS DISCHARGE DISPLAY PANEL SYSTEM WITH PROBE FOR IGNITING AND EXTINGUISHING CELLS

Dan J. Schott, Phoenix, Ariz., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 39,201, May 21, 1970, abandoned. This application Mar. 18, 1972, Ser. No. 263,011

Int. Cl. H05b *41/16, 41/24*

U.S. Cl. 315—275 6 Claims



1. In a gas discharge plasma display panel system including an a.c. gas discharge display cell for containing an ionizable gas, the combination comprising

first and second electrode means disposed on either side of said cell, respectively, for applying an a.c. gas discharge sustaining potential thereacross by connection to a source of a.c. gas discharge sustaining potential,

said first electrode means being constructed to expose a portion of said cell,

selective connection means coupled to said first and second electrode means for selectively grounding either said first or said second electrode means, and

passive probe means of electrically conductive material positionable in proximity to said exposed portion of said cell for selectively igniting or extinguishing a gas discharge in said cell in accordance with said selective connection means grounding said first or said second electrode means respectively and said probe positioned in proximity to said exposed portion of said cell.

3,881,132

COMPACT, HIGH INTENSITY ARC LAMP WITH INTERNAL MAGNETIC FIELD PRODUCING MEANS

Charles G. Miller, Los Angeles, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 173,178, Aug. 19, 1971, abandoned. This application Aug. 2, 1973, Ser. No. 385,059

Int. Cl. H05b *31/06, 31/28, 41/00*

U.S. Cl. 315—344 12 Claims

1. A high-intensity arc lamp comprising in combination:

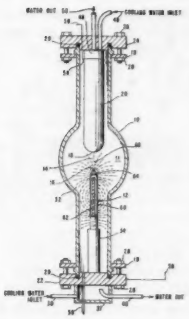
a sealed envelope for containing a discharge gas at greater than atmospheric pressure;

a cathode having a tip extending into the envelope;

an anode disposed within said envelope parallel to a line through the axis of the cathode and having a tip spaced an arc discharge gap from the tip of the cathode;

electric power means connected to the anode and cathode for forming an arc discharge between said tips including a highly luminous fireball disposed above the cathode tip; and

magnetic field producing means disposed internally within said cathode and adjacent the cathode tip for establishing a magnetic field having the maximum possible number of



field lines radiating from said cathode tip for said magnetic field for increasing lamp brightness and for improving the shape of said arc.

3,881,133

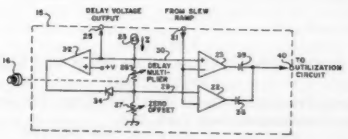
TWO DOT INDICATOR SYSTEM

George Joseph Frye, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed June 18, 1973, Ser. No. 371,220

Int. Cl. H01j *29/72*

U.S. Cl. 315—395 11 Claims



1. A system for generating reference indicator signals for a display device, comprising:

means for producing first and second reference voltage levels, said means including means for adjusting said second reference voltage level relative to said first reference voltage level;

first comparator means for comparing a substantially linear ramp voltage to a first reference voltage level and producing a first indicator signal therefrom;

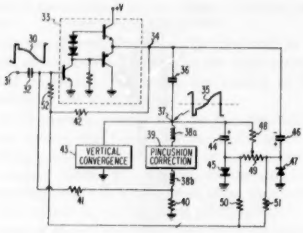
second comparator means for comparing said ramp voltage to a second reference voltage level and producing a second indicator signal therefrom; and

third comparator means connected between said first and second reference voltage levels for comparing said second reference voltage level to a third reference voltage level for causing said first reference voltage level to be adjustable relative to said second reference voltage level.

3,881,134
RASTER CENTERING CIRCUIT

Peter Eduard Haferl, Adliswil, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed May 7, 1973, Ser. No. 357,759
Int. Cl. H01j *29/54*
U.S. Cl. 315—398 **9 Claims**



1. A raster centering circuit, comprising:

a deflection amplifier including an output terminal providing an alternating current during each deflection cycle;

a capacitor, a deflection winding and a feedback resistor serially coupled in that order between said output terminal and a point of reference potential for receiving deflection scanning current from said amplifier, the junction of said deflection winding and said feedback resistor being coupled to an input terminal of said deflection amplifier;

centering current control means having a first terminal coupled to the junction of said capacitor and said deflection winding; and

a unidirectional current conducting device coupled between a second terminal of said current control means and said point of reference potential for conducting deflection current of one polarity during a first portion of each deflection cycle for causing an effective centering current in a first direction through said deflection winding and for charging said capacitor such that said charge causes a centering current in said first direction in said deflection winding during a second portion of each deflection cycle when said deflection current is of the other polarity, all of said deflection and centering current passing through said feedback resistor for minimizing nonlinearities caused by said centering current.

3,881,135
BOOST REGULATOR WITH HIGH VOLTAGE PROTECTION

Wolfgang Friedrich Wilhelm Dietz, New Hope, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 31, 1974, Ser. No. 438,322
Int. Cl. H01j *29/70, 29/76*
U.S. Cl. 315—408 **4 Claims**

1. A boost voltage regulator providing high voltage protection for a deflection system, comprising:

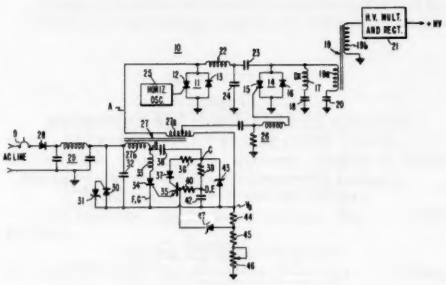
switching means operable from a first to a second state during each deflection interval for supplying scanning current to a deflection winding of said deflection system;

a source of direct current voltage;

a boost voltage regulator circuit coupled to said source of voltage and to said switching means, said regulator including controllable rectifying means for rectifying voltage generated in said switching means and adding the rectified voltage to said direct current voltage for providing a regulated boost voltage for said switching means;

an active current conducting device having its main conduction path coupled to said source of direct current voltage and a terminal of said rectifying means providing said boost voltage; and

a zener diode coupled to said terminal providing said boost voltage and a control electrode of said active current conducting device and poled for conducting current in the forward direction from said source through a junction of said active device for providing initial operating current to said switching means, said zener diode having a

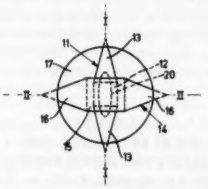


breakdown voltage characteristic such that when said boost voltage exceeds said source voltage by a predetermined amount said zener conducts in the reverse direction, causing said active device to conduct for providing a relatively low impedance path between said source and said terminal for lowering said boost voltage.

3,881,136
CATHODE RAY TUBE COMPRISING A NON-ROTATIONALLY SYMMETRICAL ELEMENT

Edial Francois Scheele, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 12, 1973, Ser. No. 340,051
Claims priority, application Netherlands, Mar. 24, 1972, 7203931
Int. Cl. H01j *29/56*
U.S. Cl. 313—453 **9 Claims**



1. A cathode ray tube comprising an image screen and an electron gun containing a cathode, a control grid, an acceleration anode, a non-rotationally symmetrical electron-optical element, a main lens for the formation on an image plane of a target of an electron beam to be emitted by the cathode and an apertured diaphragm plate disposed at said main lens, said non-rotationally symmetrical element producing an emissive cathode surface having an ovall contour and an astigmatic electron beam, the position of the main lens being adapted to the degree of astigmatism of the beam such that an image of the electron beam in the image plane constitutes an accurately defined target having a predetermined axial ratio.

3,881,137

FREQUENCY SELECTIVE DAMPING CIRCUITS

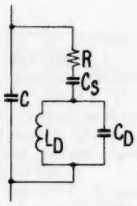
Hemesh Laxmidas Thanawala, Stafford, England, assignor to Associated Electrical Industries Limited, London, England

Filed Jan. 16, 1974, Ser. No. 433,865

Claims priority, application United Kingdom, Jan. 17, 1973, 2423/73

Int. Cl. H02h *1/04*

U.S. Cl. 317—53 21 Claims



1. A frequency selective damping circuit for the suppression of parasitic resonances associated with a voltage compensating supply-frequency capacitor, said damping circuit comprising two parallel paths one of which is a damped path including resistance and one of which is an undamped path, and a resonant circuit tuned to said supply frequency and connected to bias current of the supply frequency toward said undamped path, said supply-frequency capacitor being connected in series with said undamped path, said damping circuit further comprising reactive circuit means which, in combination with said resonant circuit provides a further resonant circuit, at the resonant frequency of which, current is biased toward said damped path, the arrangement being such that current of the supply frequency is relatively undamped and current of a predetermined other frequency is selectively damped.

3,881,138

VALVE REGULATING MEANS DISPOSED BETWEEN HV SWITCHING APPARATUS AND OVER VOLTAGE ARRESTING MECHANISM MAINTAINING PRESSURE DIFFERENTIAL THEREBETWEEN

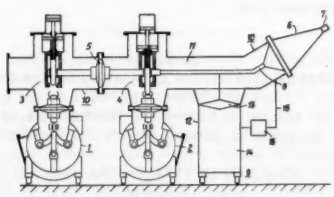
Gunther Luxa, and Werner Jakszt, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed July 2, 1973, Ser. No. 375,518

Claims priority, application Germany, July 14, 1972, 2235514

Int. Cl. H02h *1/00*; H01h *33/80*

U.S. Cl. 317—59 10 Claims



1. In a high voltage switching system, of the type including a switching system housing in which a dense gaseous insulating medium is disposed under pressure, and a voltage overload arresting apparatus including a housing, having at least one first sealed chamber coupled to the switching system housing, also containing said dense gaseous insulating medium, and at least one spark gap, and voltage dependent resistance means, disposed in said arresting apparatus housing, the improvement comprising regulating means including valve means, coupled to the switching system housing and to said arresting apparatus housing, for maintaining the pressure of said gaseous insulating medium in said chamber at a constant pressure which is less than the pressure of said gaseous insulating medium in the switching system housing.

3,881,139

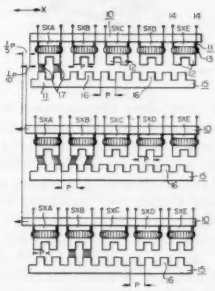
3-AXIS PULSE OPERATED LINEAR MOTOR

Seiuemon Inaba, Kawasaki; Hiromichi Shichida, and Kenichi Toyoda, both of Tokyo, all of Japan, assignors to Fujitsu Limited and Fujitsu Fanuc Limited, both of Tokyo, Japan

Filed Nov. 16, 1973, Ser. No. 416,659

Int. Cl. H02k *41/02*

U.S. Cl. 318—38 2 Claims



1. A pulse operated linear motor comprising:

a first movable element which moves only along a first direction;

a second movable element located on the first movable element which moves individually only along a second direction perpendicular to the first direction;

a third movable element located on the second movable element which moves individually only along a third direction perpendicular to the first and second directions;

a first electromagnetic driving means providing a driving force to the first movable element, which consists of a first member having a plurality of first teeth made of magnetic materials and arranged with a predetermined constant pitch along the first direction and consists of a first magnetizing member having a plurality of first magnetizing teeth which act as pole pieces and are arranged with a predetermined constant pitch along the first direction, the first magetizing teeth being surrounded by first exciting coils and being energized thereby;

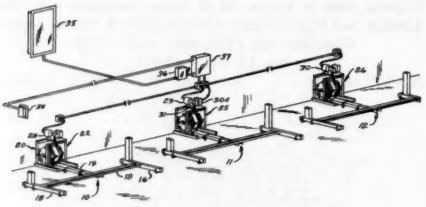
a second electromagnetic driving means providing a driving force to the second movable element, which consists of a second member having a plurality of second teeth made of magnetic materials and arranged with a predetermined constant pitch along the second direction and consists of a second magnetizing member having a plurality of second magnetizing teeth which act as pole pieces and are arranged with a predetermined constant pitch along the second direction, the second magnetizing teeth being surrounded by second exciting coils and being energized thereby;

a third electromagnetic driving means providing a driving force to the third movable element, which consists of a third member having a plurality of third teeth made of magnetic materials and arranged with a predetermined constant pitch along the third direction, and consists of a third magnetizing member having a plurality of third magnetizing teeth which act as pole pieces and are arranged with a predetermined constant pitch along the third direction, the third magnetizing teeth being surrounded by third exciting coils and being energized thereby.

3,881,140
SYSTEM FOR EXPANDING AND RETRACTING TELESCOPING SEATING ROW SECTIONS

Arlin P. Hartman, Champaign, Ill., assignor to American Seating Company, Grand Rapids, Mich.

Filed Mar. 1, 1974, Ser. No. 447,236
Int. Cl. H02p *5/46*
U.S. Cl. 318—85 **7 Claims**

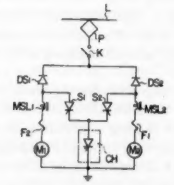


1. A system for controlling the extension and retraction of a plurality of telescoping seating row units, each unit including at least one seating row section comprising: a plurality of induction motors, one associated respectively with each of said units, one of said motors being a master control motor; a plurality of actuator means, one associated with each of said motors for moving an associated seating row unit; reversing switch means; means for supplying electrical energy to said reversing switch means; conductive distribution means for coupling said reversing switch means for connecting all of said motors in parallel with said source when said switch means is actuated; limit switch means responsive to the position of said unit associated with said master control motor for generating a first signal when said section is extended to a predetermined position and for generating a second signal when said section is retracted to a predetermined position; and control switch means for selectively coupling power to said limit switch means to energize said reversing switch means selectively to energizing all of said motors in a predetermined direction, said, limit switch means being operative to de-energize said reversing switch means when said units are in either of said positions to generate said first or second signals, whereby when said control switch means is actuated, electrical energy is supplied to all of said motors simultaneously and in parallel, and said seating units extend or retract synchronously, in parallel and in unison, and said limit switch means associated with said master control motor energizes and de-energizes said reversing switch means.

3,881,141
REGENERATIVE BRAKE CONTROL CIRCUIT

Hiroshi Narita, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 25, 1974, Ser. No. 436,722
Claims priority, application Japan, Jan. 29, 1973, 48-11055
Int. Cl. H02p *3/14*
U.S. Cl. 318—87 **7 Claims**

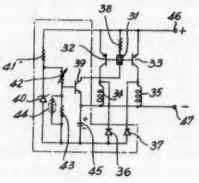


1. A regenerative brake control circuit for a plurality of motors, comprising a plurality of reactors each connected in series with each of said plurality of motors, a plurality of switching means, one end of each of said switching means being connected to one end of said series circuit including said motor and reactor, a chopper circuit having one end thereof connected electrically to the other end of each of said switching means, the other end of said chopper circuit being electrically connected to the other end of each of said series circuits including motor and reactor, and a plurality of source current blocking means through which said motor circuits are connected to a power supply, said source current blocking means preventing the source voltage from being applied to said chopper circuit during the conducting period of said chopper circuit.

3,881,142
STABILIZED BRUSHLESS MOTOR DRIVE CIRCUIT

Takeshi Endo, 14-21, 1-chome, Sawamura, Matsumoto-shi, Nagano-ken; Yoshihiro Mitsui, 1192-1, Murai-machi, Yoshikawa, Matsumoto-shi, Nagano-ken, and Hiroshi Kamakura, 7-17, 1-chome, Shiraita, Matsumoto-shi, Nagano-ken, all of Japan

Filed June 22, 1973, Ser. No. 372,564
Claims priority, application Japan, June 22, 1972, 47-61794
Int. Cl. H02k *29/00*
U.S. Cl. 318—138 **8 Claims**



1. In a brushless motor circuit having at least one hall effect element for controlling the duration of application of driving current to a driving coil, the amplitude of said driving current being responsive to the current supplied to said hall effect element, the improvement which comprises control transistor means connected by its emitter-collector path to said hall effect element to control the amplitude of the current supplied to said hall effect element; means for detecting a voltage proportional to the rotational speed of said brushless motor; and means for producing a fixed reference voltage, means connecting said fixed reference voltage and said voltage proportional to the rotational speed of said rotor in series to the base of said control transistor means for linearly controlling the amplitude of the current applied to said hall effect element in response to variations in the voltage proportional to the rotational speed of said motor to maintain said speed at a predetermined level.

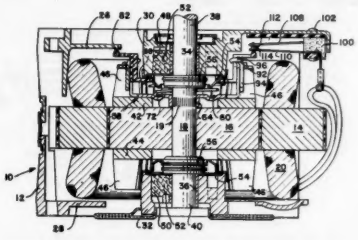
3,881,143
CENTRIFUGAL SWITCH ASSEMBLY FOR A MOTOR STARTING CIRCUIT

Wayne V. Fannin, and Edwin H. Halsted, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 11, 1974, Ser. No. 460,042
Int. Cl. H02p *1/44*
U.S. Cl. 318—221 F **3 Claims**

1. A centrifugal switch actuator assembly for an electrical motor including a main winding; a starting winding; a shaft; a housing enclosing said windings and rotatably supporting said shaft; and a rotor fixedly mounted to said shaft for rotation within said housing; said centrifugal switch actuator assembly comprising: an electrical switch assembly mounted on said housing and including first and second contacts having mutually engaging and disengaging positions; a series electrical circuit including said starting winding and said first and second contacts; a support member containing a centrally posi-

tioned aperture receiving said shaft; said support member including axially extending flanges; a basket-shaped switch actuator mounted within the flanges of said support member; guide means on both said support flanges and said basket switch actuator cooperating and preventing rotation of said actuator relative to said support member while guiding axial movement of said actuator relative to said support member; a peripheral rim on said switch actuator positioned for axial movement between a switch contact engaged position and a



switch contact disengaged position; a coil spring positioned between said support and said actuator normally biasing the basket actuator away from said support to a contact engaged position; and a plurality of weights pivotally attached to said basket switch actuator whereby said weights respond to the centrifugal forces developed at a predetermined motor speed moving said actuator against the force of said biasing spring positioning said rim out of engagement with contacts opening the circuit to said starting winding.

3,881,144

DEVICE FOR INTERMITTENTLY DRIVING AN ELECTROMAGNETIC DEVICE

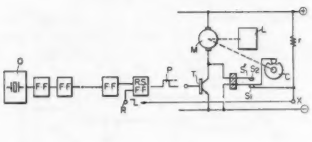
Tomio Kikuchi, Tokorozawa, Japan, assignor to Kabushikikaisha Copal, Tokyo, Japan

Filed Sept. 4, 1973, Ser. No. 394,261

Claims priority, application Japan, Sept. 8, 1973, 48-104799; Sept. 8, 1973, 48-104800

Int. Cl. H02p *3/00*

U.S. Cl. 318—466 **2 Claims**



1. A control system for intermittently driving an electric motor energized by an electric power source by controlling a switching circuit connected thereto by means of pulses applied thereto which are periodically generated by a pulse generating circuit having a reference frequency generating element and a multi-stage flip-flop circuit connected as a counting circuit for reducing the frequency generated by said reference frequency generating element, wherein the improvement comprises a resettable flip-flop circuit incorporated in said multi-stage flip-flop circuit at the final stage thereof, a reset signal generating circuit connected to said resettable flip-flop circuit and having a mechanical switch for actuating said reset signal generating circuit so as to generate a reset signal upon actuation thereof, and a cam member coupled with said electric motor so as to be actuated at the end of the actuation thereof, said cam member being so coupled with said mechanical switch that the latter is actuated to thereby reset said resettable flip-flop circuit by the reset signal applied thereto from said reset signal generating circuit.

3,881,145

PULSE GENERATING DEVICE FOR RADAR TRANSMITTING SYSTEM

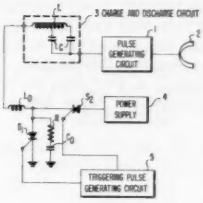
Hidetoshi Tanigaki, Nagasaki, Japan, assignor to Kiyotaka Furano, Nagasaki, Japan

Filed Apr. 15, 1974, Ser. No. 461,049

Claims priority, application Japan, Apr. 13, 1973, 48-44948

Int. Cl. H03k *17/06, 17/08, 3/82*

U.S. Cl. 320—1 **1 Claim**



1. A pulse generating device for a radar transmitting system comprising:

a charge and discharge circuit including at least a capacitor, a pulse generating circuit which is initiated by discharging of said charge and discharge circuit so as to generate microwave pulses, a semiconductor switching device which may become conducting after the charge and discharge circuit is charged so as to permit the charge and discharge circuit to discharge, an inductance connected between said charge and discharge circuit and said semiconductor switching device to delay the discharge current from the charge and discharge circuit, and a capacitor connected in parallel to the semiconductor switching device, and which is charged by a portion of the charging current for the charge and discharge circuit and is discharged when the semiconductor switching device is turned on.

3,881,146

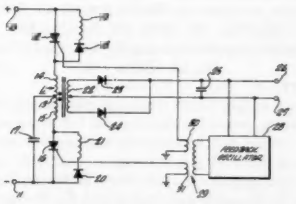
SELF-COMMUTATING FLUX-GATED INVERTER

Cravens L. Wanlass, Santa Ana, Calif., assignor to Advance Power Incorporated, Anaheim, Calif.

Filed Apr. 15, 1974, Ser. No. 460,785

Int. Cl. H02m *3/32*

U.S. Cl. 321—2 **21 Claims**



1. A self-commutating inverter-regular circuit comprising:

an input circuit;

a series circuit comprising a capacitor and an inductor having a non-linear inductance characteristic;

inverter means including at least two switching means operable in a first state to permit current flow therethrough and in a second state to prevent current flow therethrough, said inverter means connecting said capacitor-inductor circuit to said input circuit;

external means for alternately triggering said switching means into said first state resulting in energy being transferred from said inductor to said capacitor by reason of a reduction in the inductance of said inductor, said energy transfer causing the current in said capacitor-inductor circuit to reverse causing the switching means to be switched to said second state; and

an output circuit coupled to said capacitor-inductor circuit.

3,881,147

METHOD FOR PROTECTING THYRISTORS OF A CONVERTER AND SYSTEM THEREFOR

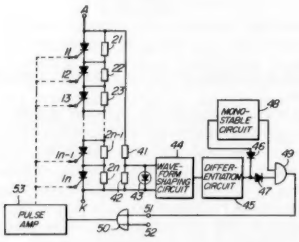
Akiteru Ueda; Hisao Amano, and Naoe Kawakami, all of Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 2, 1970, Ser. No. 474

Claims priority, application Japan, Jan. 8, 1969, 44-1292

Int. Cl. H02h *7/14*

U.S. Cl. 321—13 **20 Claims**



9. In a converter connected between a DC power line and a polyphase AC power line which comprises a plurality of arms corresponding to the phases of said AC power line and each having a plurality of thyristors connected together; a method for protecting said thyristors of each one of said arms comprising detecting the time when a reverse voltage appears across said arm, producing a signal responding to a forward voltage which appears across said arm before a predetermined time interval elapses from said time, and firing said thyristors of said arm by said signal.

3,881,148

POWER SUPPLY FOR ELECTRICAL PROCESSING APPARATUS

Yasushi Mizuhara, Kamakura; Takashi Kikumoto, Kawasaki; Tsuwao Abe, Kawasaki; Hiroyuki Hitomi, Kawasaki; Masayasu Ochiai, Kawasaki, and Tuguaki Itoh, Kawasaki, all of Japan, assignors to Hitachi Seiko Ltd., Tokyo, Japan

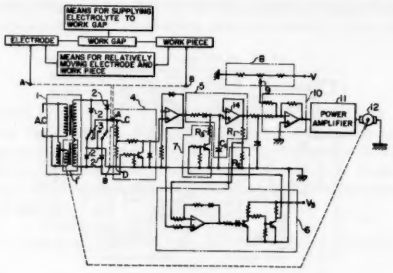
Filed Nov. 28, 1972, Ser. No. 310,143

Claims priority, application Japan, Nov. 29, 1971, 46-95313

Int. Cl. H02m *7/40*

U.S. Cl. 321—47 **10 Claims**

1. A power supply for an electrical processing apparatus of the kind having means for carrying out full-wave rectification of an a.c. voltage and applying the electrical power thus obtained across the work gap between an electrode and a workpiece disposed opposite to each other, means for supplying an electrolyte to the work gap, and means for moving the electrode and the workpiece toward each other or moving one of the electrode and the workpiece toward the other for processing the workpiece into a desired shape, said power supply comprising transformer means for reducing the voltage of a commercial a.c. source to a predetermined voltage, rectifying means for carrying out fullwave rectification on the a.c. voltage induced in the secondary side of said transformer means, voltage holding means for holding the peak value of the output voltage of said rectifying means in the form of a d.c. voltage, and means for renewing the d.c. voltage held in said voltage holding means in the manner so that a first d.c. voltage level established in said voltage holding means and corresponding to the peak value of a first waveform portion of the output voltage of said rectifying means is cancelled immediately before a momentary value of a second waveform portion following said first waveform portion attains the peak value



thereof and a second d.c. voltage level corresponding to the peak value of said second waveform portion is established in said voltage holding means, whereby the output voltage of said rectifying means is controlled in response to the deviation of the d.c. voltage level established in said voltage holding means.

3,881,149

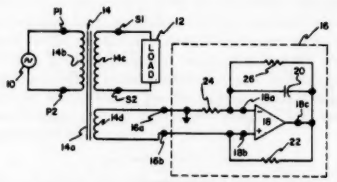
COMPENSATED TRANSFORMER CIRCUIT

Frederick J. Kiko, Sheffield Village, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio

Filed Aug. 23, 1973, Ser. No. 391,145

Int. Cl. G01r *19/00*

U.S. Cl. 323—6 **15 Claims**

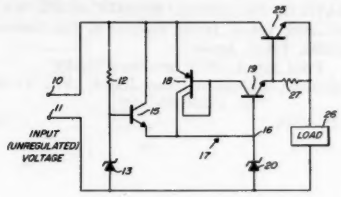


1. A transformer circuit which provides an uninterrupted path for the flow of primary and secondary current and which compensates for the frequency dependent attenuation of transformer signals that is introduced by the magnetizing inductance of the transformer comprising, in combination, a magnetic core, primary, secondary and tertiary windings disposed on said core, an impedance simulating network including feedback circuitry for establishing voltages and currents which affect the circuitry to which said voltages and currents are applied as if a negative inductance were connected to said circuitry, said negative inductance having a magnitude proportional to the magnetizing inductance of said transformer, and means for connecting said impedance simulating network to said tertiary winding to effectively cancel the magnetizing inductance of said transformer.

3,881,150
VOLTAGE REGULATOR HAVING A CONSTANT CURRENT CONTROLLED, CONSTANT VOLTAGE REFERENCE DEVICE

Michael John Gay, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 308,221, Nov. 20, 1972, abandoned.
This application Nov. 12, 1973, Ser. No. 415,251
Int. Cl. G05f 1/56
U.S. Cl. 323—22 T 13 Claims



1. A voltage regulator circuit responsive to an unregulated voltage developed between first and second conductors to provide a regulated voltage between a third conductor and the second conductor, the voltage regulator circuit including:

a first reference device having a first electrode connected to the second conductor and a second electrode;

first electron control means having a control electrode connected to the second electrode of said first reference device, a first electrode and a second electrode;

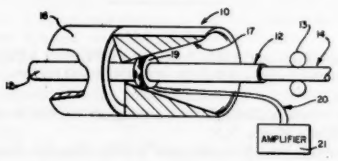
second electron control means having a first electrode connected to the first conductor, a control electrode directly connected to said second electrode of said first electron control means, a second electrode connected directly to said second electrode of said first reference device, and a third electrode connected directly to said second electrode of said first electron control means; and

circuit means connecting said first electrode of said first electron control means to the third conductor.

3,881,151
EDDY CURRENT FLAW DETECTOR COMPRISING PASSING THE TEST PIECE THROUGH AN INVARIENT MAGNETIC FIELD GRADIENT AND POSITIONING SENSOR IN THE GRADIENT

Louis K. Bigelow, Jr., Acton, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.

Filed Jan. 7, 1974, Ser. No. 431,220
Int. Cl. G01r 33/12
U.S. Cl. 324—37 10 Claims



1. An apparatus for detecting flaws in extended metallic pieces comprising,

means generating a time invariant magnetic field gradient in a first direction,

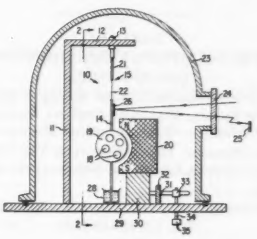
transport means for transporting said metallic piece axially in said first direction through said magnetic field gradient, sensing means disposed within a region of said magnetic field gradient wherein the change of field per unit distance is substantially constant, said sensing means being in close juxtaposition to the position of a metallic piece transported by said transport means through said magnetic field gradient, said sensing means being insensitive to noise from external sources and producing an output signal which varies in relation to variations in the net magnetic field caused only by variations in eddy current within said transported metallic piece, and

output means coupled to said sensing means for providing an output indication of the variations in said sensing means signal to indicate flaws in said transported metallic piece.

3,881,152
METHOD AND DEVICE FOR MEASURING OXYGEN PARTIAL PRESSURE

Akira Tasaki, 1-3-9 Yamada-higashi, Suita-shi, Osaka-fu, Japan

Filed Sept. 19, 1973, Ser. No. 398,859
Int. Cl. G01r 33/12
U.S. Cl. 324—36 4 Claims

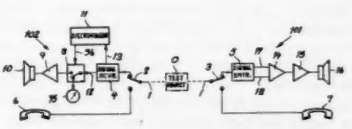


1. A method for measuring the partial pressure of oxygen in an ambient gas mixture comprising the steps of exposing two balloons to a non-uniform magnetic field, one of said balloons enclosing an oxygen-containing gas as reference, the other of said balloons having a series of perforations to provide a balloon filled with said ambient gas mixture, and said magnetic field acting upon said balloons from the same direction, and measuring the torque acting on said two balloons.

3,881,153
SYSTEM FOR MEASURING TRANSMISSION CHARACTERISTICS PROVIDED WITH VOICE COMMUNICATION EQUIPMENT

Peter Harzer, Eningen, Germany, assignor to Wandel u. Goltermann, Reutlingen, Germany

Filed Mar. 12, 1974, Ser. No. 450,455
Claims priority, application Germany, Mar. 14, 1973, 2312653
Int. Cl. G01r 27/00
U.S. Cl. 324—57 R 16 Claims



1. In a system for measuring transmission characteristics of a test object by way of a test line extending between a first and a second station, said first station being provided with a first transducer sending out a test signal which includes a characteristic component of a predetermined recurrence frequency, said second station being provided with a second transducer for receiving said test signal, the combination therewith of:

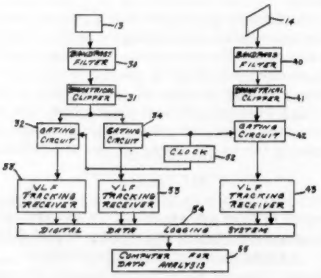
first voice-communication means at said first station;
second voice-communication means at said second station normally disconnected from said line;
first switch means at said first station for alternatively connecting said first transducer and said first voice-communication means to said line;
second switch means at said second station operable independently of said first switch means for connecting said second voice-communication means to said line;
a first monitoring receiver at said first station responsive to voice signals arriving over said line;
a second monitoring receiver at said second station responsive to voice signals arriving over said line;
circuit means at said first station for connecting said first monitoring receiver to said line in decuppled relationship with said first transducer; and
discriminating means at said second station normally disconnecting said second monitoring receiver from said line, said discriminating means being responsive to the absence of said component for establishing a working connection from said line to said second monitoring receiver.

3,881,154

HIGH RESOLUTION, VERY SHORT PULSE, IONOSOUNDER

Edward A. Lewis, Harvard; John E. Rasmussen, Concord; John L. Heckscher, Wayland; Paul A. Kossey, Lexington; Roger W. Whidden, Dedham, all of Mass., and James R. Stahmann, Miramar, Fla., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed July 13, 1973, Ser. No. 379,026
Int. Cl. H04b *1/06*
U.S. Cl. 325—67 **7 Claims**



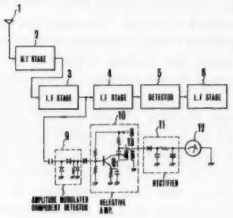
6. A high resolution very short pulse ionosounder having a transmitter station displaced a preselected distance from a receiver station comprising, at the transmitter station, very low frequency transmitting means generating signals in the form of single cycle pulses of a preselected very short duration at a preselected pulse repetition rate, vertical antenna means of preselected length in accordance with the signal frequency to be transmitted, said vertical antenna means transmitting said generated signals in the form of groundwave and skywave pulses, at the receiver station, first and second loop receiving antenna means with horizontal axis, said first loop receiving antenna means being in the vertical plane through said vertical antenna means and responding to the magnetic fields of the groundwave signal and the unrotated component of the skywave signal, said second loop receiving antenna means perpendicular to the first loop receiving antenna means and responding to the rotated component of the skywave signal, each of the transmitted pulses being so short in duration permitting the reception of the groundwave pulse at the receiver station distinctly prior in time to the reception of the skywave pulse, first and second means receiving the output waveforms from said first and second receiving antenna means, respectively, and averaging said waveforms simultaneously for a multiplicity of equally spaced sampling points thus by averaging the contribution of noise cancel out giving an average value for the waveform amplitude at that particular sampling point.

3,881,155

METHOD AND APPARATUS FOR DETECTING THE MULTI-PATH OF FM STEREO BROADCASTED WAVES

Noboru Saikaishi, Tokyo, Japan, assignor to Trio Electronics Incorporated, Tokyo, Japan

Filed July 5, 1973, Ser. No. 376,619
Claims priority, application Japan, July 8, 1972, 47-68574
Int. Cl. H04b *1/06*
U.S. Cl. 325—344 **5 Claims**



1. In a method of detecting the effect of multi-path transmission of a FM stereo broadcasted wave transmitted with FM modulation components including a pilot signal of predetermined frequency with constant amplitude modulation wherein the wave received by a FM stereo receiver is converted into an intermediate frequency signal, and the amplitude modulated wave caused by said multi-path transmission is detected from said intermediate frequency signal, the improvement which comprises the steps of selecting only said pilot signal from said amplitude modulated wave, further detecting the selected said pilot signal to recover a detected value of said constant amplitude modulation and utilizing said detected value as a measure of said multi-path transmission.

3,881,156

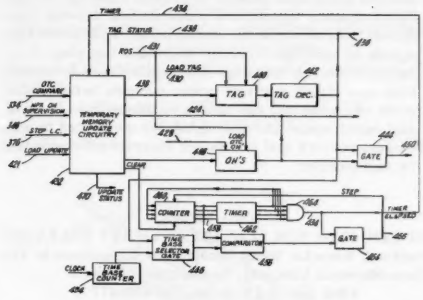
ELECTRONIC TIMER WITH RECIRCULATING MEMORY AND COUNTER FOR INCREMENTING THE MEMORY

Herman Deutsch, Raleigh, N.C., assignor to Tele-Resources, Inc., White Plains, N.Y.

Division of Ser. No. 375,459, July 2, 1973, Pat. No. 3,862,372, which is a continuation-in-part of Ser. No. 291,960, Sept. 25, 1972, Pat. No. 3,825,693. This application Sept. 12, 1974, Ser. No. 505,502
Int. Cl. G01r *29/02;* **H03k** *5/00*
U.S. Cl. 328—129 **4 Claims**

1. A timer comprising a recirculating memory in which binary timer numbers can be recorded, counter means for periodically incrementing each recorded number once during each recirculation of the memory, means for supplying a time base signal of changing polarity, comparator means for comparing the low order bit of each recorded binary number to

the phase of the time base signal supplied, and gate means responsive to the comparator means for causing the counter



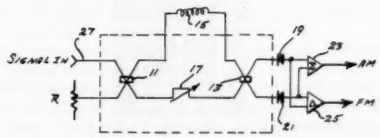
means to increase the timer number each time the phase of the time base signal changes.

3,881,157

TWO-COUPLER MICROWAVE FREQUENCY DISCRIMINATOR WITH INTERNAL ADJUSTABLE DELAY LINE

Robert L. McLaughlin, Pompey, N.Y., assignor to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Mar. 28, 1974, Ser. No. 455,768
Int. Cl. H03d *5/00*
U.S. Cl. 329—116 **2 Claims**



1. A microwave frequency discriminator comprising:

a. a first transmission channel with first and second terminals and having an input signal source at the first terminal;

b. a second transmission channel with first and second terminals and having a resistance at the first terminal, the second transmission channel intersecting the first transmission channel at first and second intersection points;

c. a first 3 db coupler located at the first intersection point of the first and second transmission channels;

d. a second 3 db coupler located at the second intersection point of the first and second transmission channels;

e. an adjustable delay connected within the first transmission channel between the first and second intersection points;

f. a fixed delay connected within the second transmission channel between the first and second intersection points;

g. a first detecting diode connected to the second terminal of the first transmission channel

h. a second detecting diode matched to the first detecting diode connected to the second terminal of the second transmission channel;

i. an adding video wideband amplifier fed by the first and second diodes producing an amplitude modulation output; and

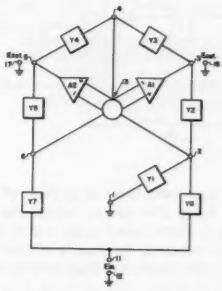
j. a subtracting video wideband amplifier fed by the first and second diodes producing a frequency modulated output.

3,881,158

MULTIPURPOSE ACTIVE FILTER NETWORK

Henry J. Orchard, Santa Monica, and Charles E. Schmidt, Woodside, both of Calif., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed May 29, 1974, Ser. No. 474,274
Int. Cl. H03f *1/36*
U.S. Cl. 330—84 **18 Claims**



1. An active filter configuration having six nodes comprising:

a first admittance connected between a first and second of said nodes;

a second admittance connected between said second and third of said nodes;

a third admittance connected between said third and fourth of said nodes:

a fourth admittance connected between said fourth and fifth of said nodes;

a fifth admittance connected between said fifth and sixth of said nodes;

a voltage input terminal adapted for connection to an input voltage source having a common reference;

a sixth admittance connected between said input terminal and said second node;

a seventh admittance connected between said input terminal and said sixth node;

each of said admittances comprising an RC two terminal network;

a first differential input amplifier having an output connected to said third node;

a second differential input amplifier having an output connected to said fifth node;

circuit means connecting the inputs of said amplifier to said second, fourth and sixth nodes;

said configuration providing a filter output terminal at one of nodes three and five for a filter output voltage having a common reference;

said first node being connected to said common reference; and

at least two of said admittances each containing a capacitor.

3,881,159

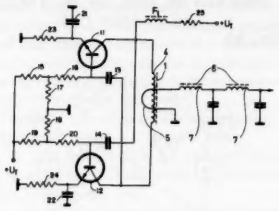
VOBULATED OSCILLATOR WITH CO-TUNED HARMONIC FILTER HAVING MAGNETICALLY TUNED INDUCTIVE ELEMENTS

Robert Zimmerman; Ferenc Felfoldi, and Ferenc Mako, all of Szekesfehervar, Hungary, assignors to Videoton Radio-E Televiziogyar, Szekesfehervar, Hungary

Filed Nov. 30, 1973, Ser. No. 420,675
Claims priority, application Hungary, Feb. 14, 1973, VI 915
Int. Cl. H03b *5/12*
U.S. Cl. 331—77 **2 Claims**

1. Vobulated oscillator arrangement including a frequency determining resonance circuit, comprising an inductive member wound around a ring-shaped high-frequency ferrite core in the air gap of a premagnetizing low frequency iron core, the axis of said HF ferrite core being substantially normal to the

premagnetizing flux lines extending through said air gap, and a harmonic filter circuit coupled to the output of said oscillator, said filter circuit having inductive elements wound around ring-shaped high frequency ferrite cores in the air gap of said



premagnetizing iron core, the energization of the premagnetizing iron core being effective to change the oscillating frequency within a predetermined range and at the same time to extend the upper turnover frequency of said harmonic filter well over the second harmonic frequency of said oscillator.

3,881,160

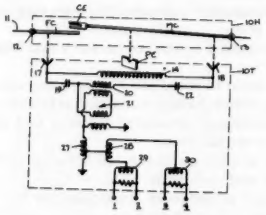
CATV MULTI-TAP DISTRIBUTION BOX

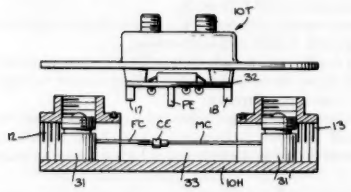
Joseph I. Ross, 5 Ridge Rock Ln., East Norwich, N.Y. 11732

Filed May 20, 1974, Ser. No. 471,659

Int. Cl. H03h *7/48*

U.S. Cl. 333—8 **8 Claims**





1. A multi-tap distribution box for a community antenna system, said box being interposed in a primary line carrying high-frequency signals and power currents to subscribers who are linked to the primary line by secondary lines coupled to taps on the box, said box comprising:

A. an open housing having an input port and an output port for interposing the box in the primary line.

B. a switch disposed in said open housing, said switch having a fixed element connected to one of said ports and a movable element connected to the other of said ports,

C. a removable tap plate secured to said housing to seal same, said plate having external taps and being provided with a circuit board on which is mounted a pair of connectors adapted to engage the elements of said switch, means deflecting said movable element to break open said switch, a blocking inductor connected between said connectors to provide a passage between said ports for said power currents while impeding the flow of said high-frequency signals therebetween, a by-pass network shunted across said inductor to provide a passage for said high-frequency signals, and a distribution network connected to said by-pass network to supply a portion of said signals to said taps whereby when said tap plate is removed from said housing, said switch closes to convey both said signals and said power currents between said ports and when said tap plate is secured to said housing, said switch opens and said signals are conducted by said by-pass network and said power currents are conducted by said inductor.

3,881,161

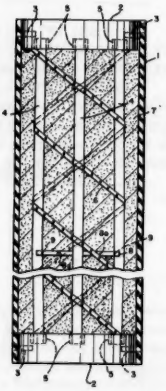
ELECTRIC FUSE FOR ELEVATED CIRCUIT VOLTAGES

Frederick J. Kozacka, South Hampton, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed Jan. 3, 1974, Ser. No. 430,477

Int. Cl. H01h *85/14*

U.S. Cl. 337—159 **1 Claim**



1. An electric fuse for elevated circuit voltages including

a. a tubular casing of electric insulating material;

b. a pair of cylindrical plug terminals plugging the ends of said casing, the axially inner end surface of each of said pair of plug terminals being provided with registering blind bores arranged to form substantially circular patterns coaxially related to said pair of plug terminals;

c. a plurality of parallel rods of gas-evolving insulating material having ends fitting into and inserted into said blind bores and forming jointly with said pair of plug terminals a squirrel-cage-like structure;

d. a fusible element wound helically around said plurality of rods embedded in a pulverulent arc-quenching filler and having ends conductively connected to said pair of plug terminals, the axial ends of said plurality of rods having a predetermined spacing from the centers of said axially inner end surfaces of said pair of plug terminals; and

e. a planar annular brace member of electric insulating material arranged in coaxial relation to said pair of plug terminals at a point intermediate said ends of said plurality of rods, said annular brace member being provided with a plurality of angularly displaced grooves at the radially outer periphery thereof, each of said plurality of grooves being engaged by one of said plurality of rods, the points of engagement of said plurality of rods and of said annular brace member having a larger spacing from the center of said annular member than said predetermined

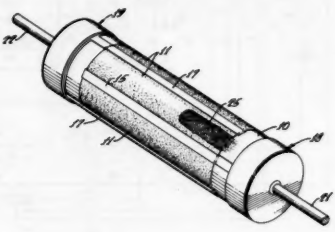
spacing so that said annular member imparts a radially outwardly directed thrust to said plurality of rods.

3,881,162

FILM-TYPE CYLINDRICAL RESISTOR AND METHOD OF MANUFACTURING

Richard E. Caddock, 640 Sandalwood Ct., Riverside, Calif. 92507

Filed Apr. 1, 1974, Ser. No. 456,474
Int. Cl. H01c *3/02*
U.S. Cl. 338—61 **9 Claims**



1. A film-type resistor, which comprises:
a. an elongated cylindrical substrate formed of ceramic,
b. a resistive film provided adherently on the exterior cylindrical surface of said substrate,
c. a plurality of termination film strips or lines formed of highly-conductive material,
said termination film strips being superimposed adherently over said resistive film,
said termination film strips being elongated and extending in directions substantially parallel to the axis of said substrate,
said termination film strips being circumferentially spaced about said substrate,
said termination film strips dividing said resistive film into a plurality of resistor elements through which current flows in directions generally circumferential to said substrate,
d. means to connect one set of alternate ones of said termination film strips to one lead extending from one end of the resistor, and to connect the other set of alternate ones of said termination film strips to another lead extending from the other end of said resistor, and
e. a groove formed through said resistive film at one region thereof in order to increase the current path length and thus raise the resistance value of the resistor,
said groove extending substantially parallel to the axis of said substrate,
said groove being formed in only one of said resistor elements,
said groove scoring said substrate but, because of said substantial parallelism to the axis of said substrate, having minimal effect upon the physical and thermal shock resistance thereof,
said groove not being formed through any part of any of said termination film strips or lines.

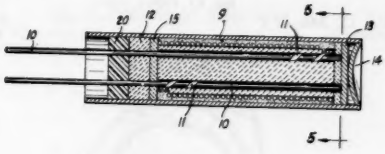
3,881,163

ELECTRICAL CARTRIDGE-TYPE HEATER

Herbert L. Lindroth, Ballwin, and Carl E. Barker, Overland, both of Mo., assignors to Industrial Engineering and Equipment Co., St. Louis, Mo.

Filed May 28, 1974, Ser. No. 473,288
Int. Cl. H01c *3/00*
U.S. Cl. 338—302 **10 Claims**

1. An electrical heating unit comprising:
a. a core of insulating material having a pair of passages extending therethrough,
b. a resistor coil wound on said core,



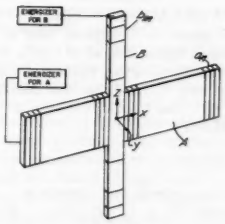
c. a pair of terminal pins in said passages, and
d. means interconnecting the ends of said resistor coil each to one of said terminal pins, comprising strips of flat, longitudinally twisted metallic ribbon extending longitudinally in said core passages and making surface to surface contact with said terminal pins.

3,881,164

CROSS ARRAY ULTRASONIC TRANSDUCER

George Kossoff, Northbridge, New South Wales, Australia, assignor to The Commonwealth of Australia, Phillip, Australia

Filed Sept. 13, 1973, Ser. No. 396,875
Int. Cl. G01s *9/66*
U.S. Cl. 340—1 R **4 Claims**

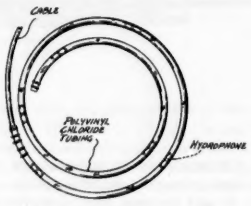


1. Apparatus for the ultrasonic examination of an object comprising:
a first phased array transducer comprising a first plurality of elements;
a first transducer energizing means for progressively energizing selected ones of said elements to form a beam of pulses of ultrasonic energy directed into the object and focused in the longitudinal plane of the transducer;
a second phased array transducer comprising a second plurality of elements different in size and quantity from the elements in said first plurality of elements positioned with its longitudinal plane transverse to the longitudinal plane of said first phased array transducer;
a second transducer energizing means for progressively energizing selective ones of said second plurality of elements to focus said second phased array transducer in the longitudinal plane of said first phased array transducer.

3,881,165
CABLE MOUNTED MAGNETOSTRICTIVE LINE HYDROPHONE

David E. Parker, Pawcatuck, Conn., and Henry G. Smith, Jr., Charleston, S.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 6, 1970, Ser. No. 34,929
Int. Cl. G01v 1/38
U.S. Cl. 340—3 T 5 Claims

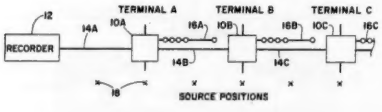


1. A flexible magnetostrictive line hydrophone comprising a flexible electric cable having a watertight jacket and including at least two insulated conductors,
   a flexible helix of magnetostrictive ribbon around a length of the cable,
   a toroidal winding of a length of a continuous thin flexible conductor around the helix of magnetic ribbon,
   the ends of the conductor forming the toroidal winding being electrically connected to the two insulated conductors of the cable.

3,881,166
DATA ARRAY NETWORK SYSTEMS

J. Robert Fort; James A. Westphal, both of Altadena, and Donald R. Juilfs, Chatsworth, all of Calif., assignors to Geophysical Systems Corporation, Pasadena, Calif.

Filed May 7, 1973, Ser. No. 358,097
Int. Cl. G01v 1/34
U.S. Cl. 340—15.5 TS 13 Claims

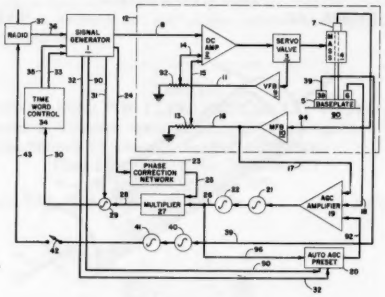


1. A data gathering system comprising:
   a. a plurality of N array terminals:
   b. each array terminal having a plurality of P ports into each of which a multiple conductor cable can be connected, said multiple conductors comprising signal, clock and control conductors:
   c. means, including a plurality of selected lengths of said cable to connect between ports in different array terminals, in series connection, and to connect the last in series of said terminals to array controller means:
   d. means in said array controller means to signal said terminals, by a coded signal on said control conductors: and
   e. means in each of said terminals to respond by transmitting a coded signal indicative of whether a cable is or is not plugged into each of said ports in each of said terminals.

3,881,167
METHOD AND APPARATUS TO MAINTAIN CONSTANT PHASE BETWEEN REFERENCE AND OUTPUT SIGNALS

Charles R. Pelton; Kim L. Mitchell, and David H. Gauger, all of Ponca City, Okla., assignors to Pelton Company, Inc., Ponca City, Okla.

Filed July 5, 1973, Ser. No. 376,465
Int. Cl. G01v 1/00
U.S. Cl. 340—15.5 TC 21 Claims



1. An electrically controlled vibrator system in which a reference analog signal, or sweep, of selected frequency content and selected time duration is used to control a vibrator to create a seismic output signal, comprising:
   a. a reference digital signal generator means for producing a reference train of time-spaced digital signals of selected magnitude, responsive to a corresponding first train of time-spaced time-word signals;
   b. a driver digital signal generator means for producing a driver train of time-spaced digital signals of selected magnitude responsive to a corresponding second train of time-spaced time-word signal;
   c. digital to analog conversion means to convert said reference digital signals to a reference analog signal, and to convert said driver digital signals to a driver analog signal;
   d. means to control and drive said vibrator responsive to said driver analog signal;
   e. means to derive an output feedback signal indicative of said seismic output signal from said vibrator; and
   f. means responsive to the phase of said output feedback signal with respect to the phase of said reference analog signal to shift said second train of time-word signals with respect to said first train of time-word signals;
   whereby said driver analog signal will be correspondingly shifted in phase with respect to the phase of said reference analog signal.

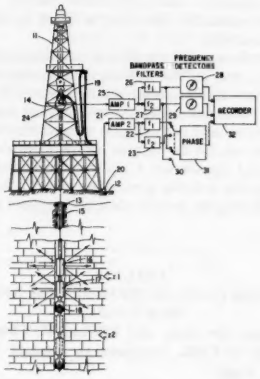
3,881,168
SEISMIC VELOCITY DETERMINATION

John B. Farr, and Ronald W. Ward, both of Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.

Filed Dec. 11, 1973, Ser. No. 423,873
Int. Cl. G01v 1/40, 1/16
U.S. Cl. 340—15.5 BH 13 Claims

1. A method of seismic investigation of the earth comprising the following steps carried out at a plurality of locations:
   a. applying at least approximately sinusoidal seismic waves to the earth by a seismic alternating source,
   b. receiving seismic waves from said source at a seismic receiver, one of said source and said receiver for each location being fixed at least near the surface of the earth and the other being at successively different depths in a well, and
   c. measuring the phase between waves received at said receiver and a reference signal derived from said source

for each of said plurality of locations, one of which locations involves a source-receiver spacing of less than a



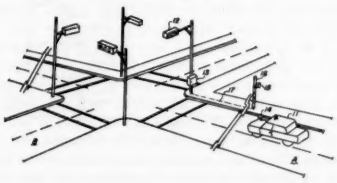
wavelength, whereby the traveltime of seismic waves from said source to said receiver may be determined.

3,881,169

EMERGENCY VEHICLE TRAFFIC CONTROLLER

Henry G. Malach, Beaumont, Tex., assignor to Traffic Control Products, Inc.

Filed June 1, 1973, Ser. No. 366,089
Int. Cl. G08g *1/07*
U.S. Cl. 340—32 **10 Claims**



1. A traffic controller for regulating traffic flow through a traffic intersection equipped with a traffic signal comprising:

a. detector means responsive to an audible, transmitted audio frequency warning signal which has been transmitted through the atmosphere from an emergency vehicle;

b. frequency selective means connected with said detector means for determining the presence of a plurality of selected audio frequencies in the transmitted signal;

c. timing means connected with said frequency selective means for determining whether all of said plural selected signals occur within a selected time interval; and

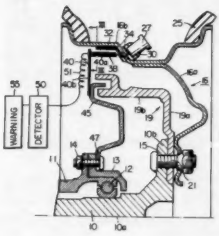
d. control means connected with said timing means and said frequency selective means and operable upon the occurrence of said plural selected signals within said selected time interval to operate said traffic signal in a non-normal, predetermined manner.

3,881,170

VEHICLE TIRE ABNORMALITY INDICATOR WITH INDUCTIVE COUPLING MEANS

Akio Hosaka, Yokohama, and Kiyoshi Wazawa, Fujisawa, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 26, 1973, Ser. No. 344,486
Claims priority, application Japan, Mar. 27, 1972, 47-35046
Int. Cl. G08b *19/00;* **B60c** *23/04*
U.S. Cl. 340—52 F **4 Claims**



1. A device for automatically detecting and indicating abnormal conditions in an pneumatic tire, mounted on a rim portion of a road wheel of a wheeled vehicle, including the tire internal pressure below a predetermined value and tire temperature above a predetermined value, comprising

a tire condition sensor mounted on the rim portion and extending into the interior of the pneumatic tire to product an electric signal upon the occurence of tire abnormality;

coupling means responsive to said electric signal comprising an annular primary coil secured to and extending along the inner periphery of the rim of the road wheel for rotation with the tire, said primary coil being electrically connected to said tire condition sensor, and an annular secondary coil attached to a relatively stationary portion of the vehicle and disposed adjacent to said primary coil, inwardly of said rim of said road wheel, said annular secondary coil being surrounded by said primary coil in concentric relationship therewith for continuous inductive coupling to said primary coil, whereby the secondary coil exhibits a marked inductance change when said tire condition sensor produces the electric signal;

detector means connected to the secondary coil to detect said marked inductance change; and

warning means connected to said detector means for warning the driver of the detected tire abnormality in response to the marked inductance change.

3,881,171

VAULT PROTECTED WITH ELECTRONIC TIME AND COMBINATION LOCK

Charles J. Moorman, and Howard S. Wagner, both of Cincinnati, Ohio, assignors to The Mosler Safe Company, Hamilton, Ohio

Filed Dec. 3, 1973, Ser. No. 421,498
Int. Cl. E05b *49/00*
U.S. Cl. 340—164 R **17 Claims**

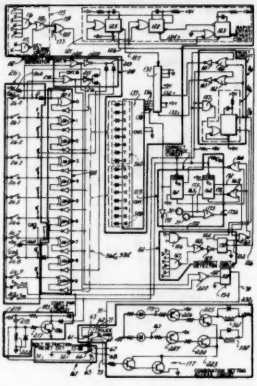
1. An electronic time and combination lock system for permitting access to persons correctly entering the digits of a predetermined multi-digit combination at a predetermined time of day of a specific day, comprising:

digit entry means for entering multiple digits when access is desired, said digit entry means generating electrical signals correlated to the digits entered,

validation means responsive to the electrical signals generated by said digit entry means for determining if the entered digits correctly correspond to predetermined

multi-digit combination and generating a first electrical control signal upon correct correspondence,

an alarm clock presettable to a predetermined future time of day of a specific day to provide a second electrical control signal when said predetermined future time of day



of said specific day arrives, said present future time being independent of said digits of said combination, and

means responsive to the coincidence of said first and second electrical control signals for generating an electrical signal permitting access.

3,881,172

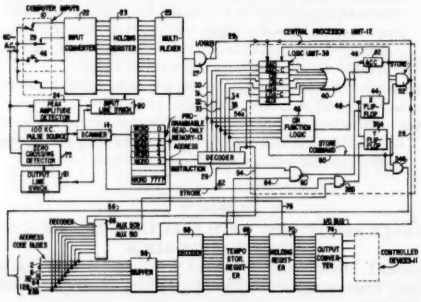
PROCESS CONTROL COMPUTER

Peter G. Bartlett, and Donald E. Henry, both of Davenport, Iowa, assignors to Struthers-Dunn, Inc., Pitman, N.J.

Continuation-in-part of Ser. No. 203,570, Dec. 1, 1971, Pat. No. 3,761,882. This application Mar. 30, 1973, Ser. No. 346,507

Int. Cl. G06f 9/00

U.S. Cl. 340—172.5 **3 Claims**



1. In a process control computer capable of executing a jump instruction, program storage means, including a read-only memory for storing a sequence of instructions which may include a jump instruction, instruction decoding means having an input fed by said memory, input means, output means, and devices controlled by said output means, the improvement compirsing:

central processor means to execute said decoded instructions in sequence and which in response to a jump instruction may inhibit the output means from responding to data signals without impairing the response of the central processor to other instructions, said central processor means comprising

a. accumulator means which, in response to instructions from said instruction decoding means, feeds control signals to said output means,

b. logic means which receives to be processed from said input means, and also receives decoded instructions from said instruction decoding means, for carrying out the logical operations specified by said instructions and placing data signals in said accumulator means,

c. first gate means for providing a signal in response to a jump instruction,

d. and control means comprising an auxiliary register having two states, and register setting means responsive to data signals from said accumulator means and to said signal from said first gate means for placing the register in one of said states, and second gate means controlled by said register to inhibit the output means from responding to said control signals and to inhibit the output means for modifying the existing controlling effect it has upon said devices during the period when said register is in said one state.

3,881,173

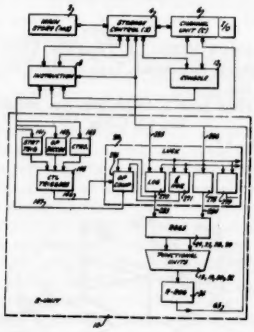
CONDITION CODE DETERMINATION AND DATA PROCESSING

Dee E. Larsen, San Jose, and Michael R. Clements, Santa Clara, both of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed May 14, 1973, Ser. No. 360,392

Int. Cl. G06f 7/00

U.S. Cl. 340—172.5 **32 Claims**



1. A data processing system having storage apparatus, instruction handling apparatus and instruction execution apparatus, and operative in response to instructions having operation codes for specifying operations to be executed and having operand fields for identifying operands to be utilized in executing the operations, and additional apparatus comprising,

instruction sequence processing means for processing instructions including a branch instruction specifying one of a plurality of possible instruction streams to be taken in accordance with a condition code specified by said branch instruction, and including a condition code-setting instruction specifying operands to be utilized in executing the condition code-setting instructions,

comparator means for comparing the operands specified by said condition code-setting instruction to form a comparison result,

means responsive to the operation code of said condition code-setting instruction in said instruction sequence processing means and to said comparison result in said com-

parator means for setting said condition code without the necessity of waiting for the execution of the operation specified by the operation code of said code-setting instruction.

3,881,174

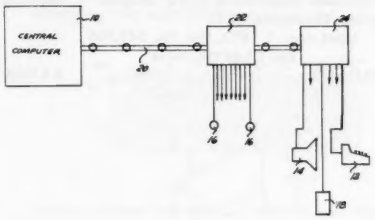
PERIPHERAL INTERRUPT APPARATUS FOR DIGITAL COMPUTER SYSTEM

Richard G. Barnich, Grand Blanc, Mich., assignor to Process Computer Systems, Inc., Flint, Mich.

Filed Jan. 18, 1974, Ser. No. 434,389

Int. Cl. G06f 3/00

U.S. Cl. 340—172.5 **8 Claims**



1. A digital computer system, comprising a central processing unit; a plurality of peripheral devices; connecting circuitry extending between the central processing unit and each of the plurality of peripheral devices including an address bus, a data bus and a single interrupt request line; a permanent unique address source associated with each peripheral device; a comparator associated with each device connected to the address bus and to the address source and operative to provide a signal to the device on the occurrence of identity between an address transmitted on the address bus and the address source of that device; means within the peripheral device for generating an interrupt request signal on the interrupt request line; means in the peripheral device operative upon receiving an interrupt acknowledge signal from the central processing unit on said connecting circuitry following the transmission of an interrupt request signal by that device for connecting said address source to the address bus; and circuitry for providing signals relating to the status of circuitry on the card to the data bus in response to the simultaneous occurrence of said signal from the comparator and an interrupt acknowledge signal so as to simultaneously identify the interrupting peripheral device and provide additional information encoded in the last said signal to the central processing unit.

3,881,175

INTEGRATED CIRCUIT SOS MEMORY SUBSYSTEM AND METHOD OF MAKING SAME

Frank M. Wanlass, Cupertino, Calif., assignor to LSI Systems Incorporated, Sunnyvale, Calif.

Filed Dec. 26, 1973, Ser. No. 428,087

Int. Cl. G11c 11/40

U.S. Cl. 340—173 SP **7 Claims**

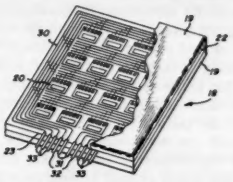
1. An integrated circuit SOS memory subsystem comprising:

an insulating sapphire substrate;

an array of memory circuits disposed on one surface of said substrate;

a bus system disposed over said substrate; and

a plurality of fuses for selectively electrically interconnecting said bus system to one of a predetermined number of



said memory circuits in said array, wherein each of said fuses is comprised of a semiconductive material.

3,881,176

APPARATUS FOR PRODUCING A SETTABLE DISTANCE MARKER

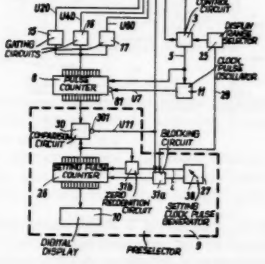
Kurt Scheer, Lichlenhainerstrasse 46, D-28 Bremen, Germany

Filed Apr. 19, 1973, Ser. No. 352,654

Claims priority, application Germany, Apr. 20, 1972, 2219296

Int. Cl. G01s 7/22

U.S. Cl. 343—5 EM **10 Claims**



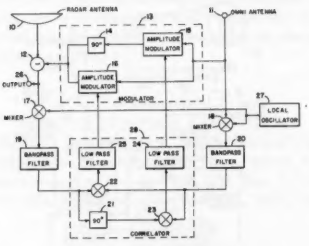
1. In an apparatus for producing a fixed distance marker and a settable distance marker on a display device of a ranging system which operates according to the reflected beam principle and including: a clock pulse generator for producing clock pulses; a pulse counter connected in series with the output of the clock pulse generator for counting the clock pulses and producing a digital output indicative of the count; control means for causing the clock pulse generator to produce clock pulses and the pulse counter to be reset whenever a ranging pulse is transmitted by the ranging system; means connected to the output of the pulse counter for producing a fixed distance marking pulse when the pulse counter produces a digital output indicative of a preset fixed count of the clock pulses; means for coupling the fixed distance marking pulse to the display device for producing a fixed distance marker thereon; settable preselector means coupled to the pulse counter for producing a settable distance marking pulse indicative of a preselected count of the pulse counter and for displaying such preselected count on a digital display; and coupling means for coupling the settable distance marking pulse to the display device for producing a settable distance marker thereon, the improvement wherein said preselector means comprises: setting pulse generator means for producing a plurality of setting pulses and including a setting control means for controlling the output pulses therefrom; setting counter means coupled to the output of said setting pulse generator means for counting the setting pulses and for producing a digital output indicative

of such count; comparision means coupled between the output of said pulse counter and the output of said setting counter means for comparing the count of said pulse counter and of said setting counter means and for producing an output pulse whenever a given ratio exists between the count of said pulse counter and of said setting counter means, said comparison means including a backwards counter having its counting input connected to the output of said clock pulse generator for receiving the clock pulses and having a zero transfer output which forms the output of said comparison means, and a transfer circuit means coupled between said backwards counter and the output of said setting counter means for transferring the count of said setting counter means to said backward counter in response to the transmission of a ranging pulse; and wherein said coupling means couples the output pulse from said comparison means to the display device to produce the settable distance marker on the display device.

3,881,177
FREQUENCY AGILE-BASEBAND SIDELOBE CANCELLER

Joseph F. Len, Skaneateles, and Peter M. Rankin, Syracuse, both of N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 12, 1974, Ser. No. 450,543
Int. Cl. G01s 7/36
U.S. Cl. 343—18 E **4 Claims**

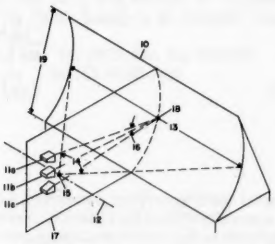


1. A system comprising a main signal path containing therein a desired and an undesired signal; a second signal path containing therein primarily the undesired signal; cancellation means connected in the main signal path for substantially cancelling the undesired signal therein; correlator means connected to said main signal path and said second signal path so as to measure the amplitude and phase difference of the undesired signal in each of these paths; modulator means having inputs connected to outputs of said correlator means and said second signal path; an output of said modulator means being connected to said cancellation means so as to subtract the output signal of the modulator from the signals contained in said main signal path; said modulator means amplitude modulating the undesired signal in said second path such that the signal and its output is of the proper phase and amplitude to cancel in the cancellation means the undesired signal in said main signal path; said main signal path is connected to an output terminal; said cancellation means is connected between the main signal path and said output terminal; said correlator means and said modulator means each contain two parallel paths; one path containing a 90° phase shifting meas therein; said correlator means contains first and second mixer means each having first and second inputs and an output; said first and second mixer means being connected in different ones of the two parallel paths of the correlator means; one input of the first mixer means is connected to the main signal path and the other input of the first mixer means is connected to said second signal path; one input of the second mixer means is connected through the 90° phase shifter to the main signal path, and the other input is connected to said second signal path; said modulator means containing first and second amplitude modulators in separate ones of the two parallel paths of the modulator means; said first and second modulators each having two inputs and an output; the output of the first mixer means being connected to one input of the first modulator; the other input of the first modulator being connected to said second signal path; the output of the second mixer means being connected to one input of said second modulator; the other input of the second modulator being connected to said second signal path; the output of said second modulator being connected through the 90° phase shifter to the input of said cancellation means; and the output of said first modulator being connected to the input of said cancellation means.

3,881,178
ANTENNA SYSTEM FOR RADIATING MULTIPLE PLANAR BEAMS

Peter W. Hannan, Smithtown, N.Y., assignor to Hazeltine Corporation, Greenlawn, N.Y.

Filed Apr. 3, 1973, Ser. No. 347,505
Int. Cl. H01q 19/14
U.S. Cl. 343—779 **4 Claims**



1. An antenna system for radiating a plurality of planar beams and having a desired radiation angle in the plane of each beam, comprising:

a cylindrical reflector for converting an incident spherical wave from a point source into a cylindrical wave, said reflector having an axial length which subtends an angle, viewed from a point on the focal axis of said reflector, which is substantially equal to said desired radiation angle;

a number of feed elements, equal to the number of planar beams desired and each oriented to efficiently illuminate said reflector with a wave energy pattern, said feed elements being located in the vicinity of said point on said focal axis and having in a plane which is perpendicular to said focal axis a component of angular displacement from each other, viewed from the center of said reflector;

whereby, when said reflector is illuminated by the pattern of any one of said feed elements, a corresponding planar beam will be radiated in a direction which is unique to that beam when observed in a plane perpendicular to said focal axis, and having said desired radiation angle in the plane of that beam.

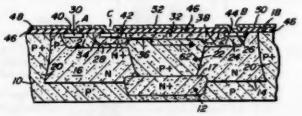
3,881,179
ZENER DIODE STRUCTURE HAVING THREE TERMINALS

William G. Howard, Jr., Mesa, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 23, 1972, Ser. No. 283,131
Int. Cl. H01l 9/00
U.S. Cl. 357—13 **13 Claims**

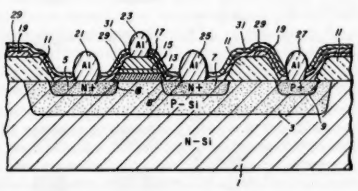
1. A zener diode fabricated in a monolithic integrated circuit structure and including in combination:

a semiconductor substrate of a first conductivity type;
a buried layer of a second conductivity type located in said semiconductor substrate;
a layer of semiconductor material partly of said second conductivity type which covers and extends from said substrate and said buried layer, said layer of semiconductor material having an outwardly facing surface;
a first portion of said layer of semiconductor material extending to said buried layer and being said first conductivity type of a given concentration;
a second portion of said layer of semiconductor material extending from said surface of said layer of semiconductor material toward said substrate and surrounding said first portion, said second portion being said first conductivity type and having a concentration which is less than said given concentration, said second portion making conductive contact between said first portion and said outwardly facing surface;
a third portion of said layer of semiconductor material extending from said surface and into said first portion to



form a junction with said first portion, said third portion isolating said first portion from said outwardly facing surface of said layer of semiconductor material, said third portion being substantially surrounded by said second portion and of said second conductivity type, said third portion forming one of the anode and cathode elements of the zener diode, said first portion forming the other of said anode and said cathode elements of the zener diode;
first conductive means located over said outwardly facing planar surface, said first conductive means having a contact making ohmic connection only to one region of said second portion;
second conductive means located over said outwardly facing planar surface, said second conductive means having a contact making ohmic connection only to another region of said second portion; and
third conductive means located over said outwardly facing planar surface, said third conductive means having a contact making ohmic connection only to said third portion.

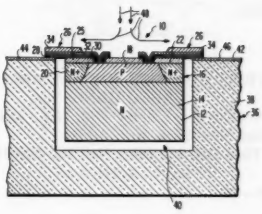
3,881,180
NON-VOLATILE MEMORY CELL
William Milton Gosney, Jr., Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 203,387, Nov. 30, 1971, abandoned. This application Oct. 19, 1973, Ser. No. 408,145
Int. Cl. H01l *11/00, 15/00*
U.S. Cl. 357—23 **30 Claims**



1. A non-volatile reprogrammable semiconductor read-only-memory device comprising:

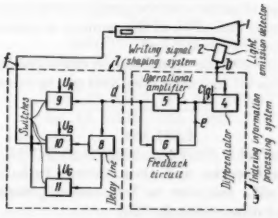
a. a substrate of one conductivity type;
b. first and second pockets of opposite conductivity type within the surface of said substrate, said pockets separated by a channel region of said substrate;
c. a first isolation layer overlying said first and second pockets of opposite conductivity;
d. a floating gate conductor layer overlying said isolation layer above said first and second pockets;
e. a second isolation layer overlying said gate conductor layer, thereby electrically isolating said floating gate metal layer; and
f. injector means underlying said floating gate conductor layer comprising a PN junction modified to lessen its breakdown voltage and thereby facilitate avalanching.

3,881,181
SEMICONDUCTOR TEMPERATURE SENSOR
Heshmat Khajezadeh, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Feb. 22, 1973, Ser. No. 334,660
Int. Cl. H01l *5/00, 3/00*
U.S. Cl. 357—69 **8 Claims**



1. A semiconductor temperature sensor comprising:
a body of semiconductive material having a region therein of uniform resistivity, and
means for supporting said body and making electrical contact to said region comprising cantilevered beam leads connected to spaced areas of said region.

3,881,182
DEVICE FOR COLOR PICTURE REPRODUCTION
Valery Ivanovich Archakov, ulitsa Valovaya, 6/8, kv. 73, Moscow; Mikhail Iosifovich Sosnovik, Kanal Griboedova, 8, kv. 25, Leningrad, and Vyacheslav Vladimirovich Meister, ulitsa Arbat, 29, kv. 4, Moscow, all of U.S.S.R.
Filed Mar. 22, 1973, Ser. No. 344,033
Int. Cl. H04n *9/24*
U.S. Cl. 358—69 **2 Claims**



1. A device for color picture reproduction, said device comprising: a beam-index display tube; said tube having a gun to form a scanning electron beam; said gun having a control electrode; said tube further including a screen having a pattern of color stripe triplets, index stripes, first guard stripes between the color stripes in each triplet and second guard

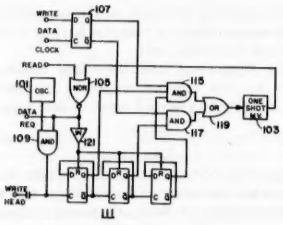
stripes between said color stripe triplets; the width of said second guard stripes being equal to three times the width of said first guard stripes; said index stripes being located in the middle of said second guard stripes; said color stripes and index stripes being adapted to emit light upon the impingement thereon of said scanning electron beam; said light emitted by said index stripes being in or near the ultraviolet region; said device further comprising writing signal shaping system means having four inputs and an output for producing a writing signal from three primary color signals fed to three of said inputs; said output of said system being connected to said control electrode of said gun; said device further comprising an index light detector, a differentiator, and an operational amplifier, each having an input and an output; said device further comprising a feedback circuit of said operational amplifier; said detector receiving at its input said light emitted by said index stripes and producing at its output indexing impulses; the input of said differentiator being connected to the output of said detector, the input of said operational amplifier being connected to the output of said differentiator, and the output of said operational amplifier being connected to the fourth input of said writing signal shaping system means; said feedback circuit being adapted to cut-off said operational amplifier during time intervals between the appearance of said indexing pulses.

3,881,183

READ/WRITE CIRCUITS FOR RELIABLE DIGITAL RECORDING

Joseph A. Weisbecker, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 25, 1973, Ser. No. 409,614
Int. Cl. G11b *5/09*
U.S. Cl. 360—40 **6 Claims**



1. The combination comprising:
means for producing a data bit to be written;
means for producing serial pulses at a certain frequency;
gating means for applying said serial pulses to a recording device;
counter means responsive to the gating means for producing output signals indicative of the number of pulses applied to the recording device; and
means responsive to the output signals of the counter means and the data bit for controlling said gating means.

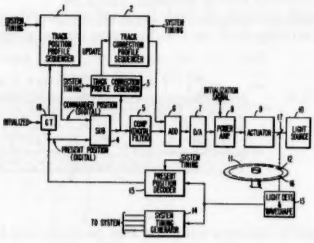
3,881,184

ADAPTIVE DIGITAL SERVO SYSTEM

Richard Wayne Koepcke, and Alvin Murray Patlach, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 28, 1974, Ser. No. 473,459
Int. Cl. G11b *21/08*
U.S. Cl. 360—78 **19 Claims**

1. An adaptive servo system comprising:
a track position profile sequencer for generating a sequence of *n* define position signals;
a track correction profile sequencer for generating a sequence of *n* correction signals, each of said *n* correction signals being associated with a corresponding *n* define position signal generated by said track position profile sequencer;
a present position decoder for generating an output signal indicative of the actual present position of the member being moved and controlled by the servo system;
an error generator connected to the track position profile sequencer and the present position decoder for generating an error signal indicative of the difference between the one of said *n* define position signals being generated by said track position profile sequencer and the output signal of the present position decoder for defining the difference between the commanded position as commanded by the track position profile sequencer and the actual position as defined by the present position decoder;



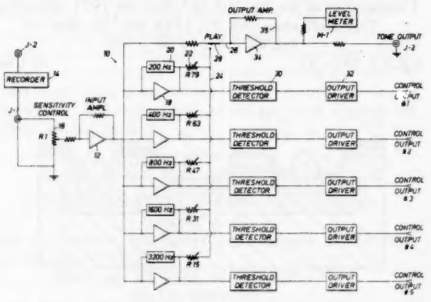
track correction profile generator connected to the present error generator for generating an output connected signal indicative of the repeatable error component of the error signal presently being generated by the present error generator;
updating means within said track correction profile sequencer connected to said track correction profile generator for updating the correction profile associated with the track presently being followed so as to correct the correction profile to cause the repeatable error component of the error signal to approach a zero value when the corrected correction profile is used by the track correction profile sequencer to generate said sequence of *n* correction signals.

3,881,185

ELECTRONIC MULTI-MEDIA PROGRAMMER

Eric Nicholas Broline, Austin, Tex., assignor to Columbia Scientific Industries Corporation, Austin, Tex.

Filed July 30, 1973, Ser. No. 384,088
Int. Cl. G11b *31/00, 27/22*
U.S. Cl. 360—80 **14 Claims**



1. A multi-media programmer system comprising:
record and playback means capable of recording and playing back audio tone signals;

an electronic input amplifier circuit providing gain for said audio tone signals and attenuating out of band signals;

a plurality of tone filter-oscillator circuits each having an electronic operational amplifier circuit and an electronic feedback network, means selectively connecting said feedback network to the input of said amplifier circuit in a filter mode and disconnecting said feedback network from said amplifier circuit during an oscillator mode, said filter-oscillator means passing only a narrow band of tone frequency signals and thereby providing a decoding function in the filter mode for decoding audio tones received from said record and playback means and generating a tone frequency signal within said narrow band of tone frequency signals to provide an encoding function in the oscillator mode, said tone frequency signals being received by said record and playback means;

threshold detector circuit means for each of said tone filter-oscillator circuits receiving the output signals fo said filter-oscillator means and including comparator circuit means comparing the output signals to a preset threshold, said threshold detector means generating a detector output only when output signal levels exceed said preset thershold;

means connecting said tone filter-oscillator circuits between the output of said input amplifier means and the input of said threshold detector means;

an output amplifier-mixer circuit having an amplifying mode for amplifying tone signals to be recorded and a mixing mode, said output amplifier-mixer means providing a voltage level monitoring function in said amplifying mode and functioning as a mixer and impedance connector for said tone filter-oscillator means in said mixing mode, said output amplifier circuit having an operational amplifier circuit; and means selectively connecting said input amplifier circuit and said output amplifier circuit with said tone filter-oscillator circuits.

3,881,186

INCREMENTAL TAPE DRIVE APPARATUS FOR TAPE RECORDERS

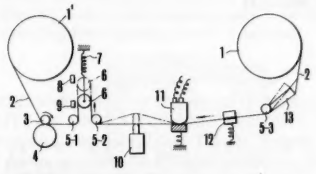
Shunsaku Nakauchi, and Takeo Kato, both of Mitaka, Tokyo, Japan, assignors to Kokusai Gijutsu Kaihatsu Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 5, 1973, Ser. No. 394,550

Claims priority, application Japan, Sept. 8, 1972, 47-89618

Int. Cl. G11b *15/20, 15/56*

U.S. Cl. 360—90 **10 Claims**



1. An incremental tape drive apparatus for intermittently advancing a tape past a recording head for the recording of intermittent signals, including in combination tape take-up and pay-out means, tape drive means for moving said tape in a take-up direction, recording head means past which said tape is to be intermittently advanced, tension roller means engaging the tape and having a relatively large mass for constantly applying to the tape a tension in the take-up direction, said tension roller means being interposed intermediate said tape drive means and said recording head means with the tension applied to the tape being insufficient to overcome the frictional resistance of said tape drive means whereby movement of the tape in the reverse direction is prevented, a single clamp means coacting with said recording head means for restraining said tape in recording position during intermittent recording operations, the tensioning force of said tension roller means being insufficient alone to overcome the frictional resistance of said clamp means, and tape deflecting means disposed intermediate said recording means and said tension roller means for deflecting said tape in a direction perpendicular to the normal travel thereof, whereby longitudinal stepping motion of the tape in the take-up direction is achieved.

3,881,187

CASSETTE TYPE THREE HEAD TAPE RECORDER

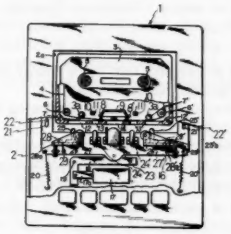
Niro Nakamichi, Kodaira-Shi, Tokyo, Japan, assignor to Nakamichi Research, Inc., Kodaira-Shi, Tokyo, Japan

Filed Dec. 10, 1973, Ser. No. 423,491

Claims priority, application Japan, Dec. 11, 1972, 47-142427[U]

Int. Cl. G11b *5/10, 15/29, 5/48*

U.S. Cl. 360—96 **10 Claims**



1. A cassette type three head tape recorder comprising a cassette having a tape extending along the small front openings in the cassette and wound between a pair of reels therein, capstan means removably received in said cassette and disposed behind said tape, head means including a reproducing head, at least one recording head and at least one erasing head, said erasing head disposed upstream of said associated recording head, said head means adapted to advance toward and withdraw from said cassette, and at least one pinch roller adapted to move together with said head means, said small front openings each substantially receiving one of said heads and said pinch roller, characterized by that said erasing head is arranged by, the side of said pinch roller and concaved at the wall facing to said pinch roller is closely adjacent to and spaced from said erasing head whereby said erasing head together with said pinch roller extends through one of said small front openings in said cassette when said head means and said pinch roller advance toward said cassette.

3,881,188

MAGNETIC DISC DRIVE

George E. Zenzefilis, 27 Los Vientos, Camarillo, Calif. 93010

Division of Ser. No. 170,194, Aug. 9, 1971. This application Nov. 23, 1973, Ser. No. 418,477

Int. Cl. G11b *5/82, 19/02, 25/04*

U.S. Cl. 360—97 **8 Claims**

1. A magnetic recording disc drive including, in combination:

a supporting frame;

a magnetic recording disc rotatably supported in said frame and having a rigid rim;

a support plate pivotably supported by said frame;

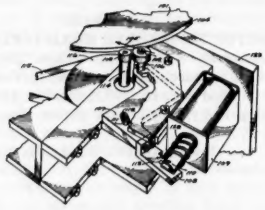
a capstan shaft rotatably mounted in said plate, the axis of rotation of said capstan shaft being parallel to the axis of rotation of said disc;

a metallic capstan secured to said capstan shaft coaxially therewith;

a first pulley secured to said capstan shaft coaxially therewith;

a first drive motor supported in said plate and having a shaft with a second pulley secured thereon coaxially therewith;

a speed reduction member including a speed reducer shaft supported rotatably in said plate, said reducer shaft carrying a large pulley and a small pulley in fixed coaxial relationship with respect to said reducer shaft;



said second pulley and said large pulley being adapted to carry a first belt therebetween;

said first pulley and said small pulley being adapted to carry a second belt therebetween; and

means positioning the reducer shaft with respect to the capstan and motor shafts such that the angle between said first and second belts approximates 90°.

3,881,189

TRANSDUCER ARRANGEMENT IN RECORDING AND/OR PLAYBACK DEVICES UTILIZING DISC RECORDS

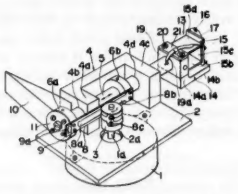
Akira Mayeda, Nishinomiya, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Sept. 5, 1973, Ser. No. 394,412

Claims priority, application Japan, Sept. 7, 1972, 47-89873; Oct. 13, 1972, 47-103026; Apr. 20, 1973, 48-45503

Int. Cl. G11b *5/56, 25/04*

U.S. Cl. 360—106 **20 Claims**



1. A transducer arrangement for use in a recording and/or playback device utilizing a disc record which is rotated about its own axis, which comprises a transducer arm, a framework for supporting said transducer arm for axial sliding movement in a diametrical direction of the disc record, means for moving said transducer arm in said diametrical direction, a transducer head for recording and/or reproducing signals on the disc record in contact therewith, elastic means for yieldingly mounting said transducer head on one end of said transducer arm, and adjustment means operatively associated with said elastic means for moving said elastic means into a selected deformed condition for movement of said transducer head into a selected position along a path extending substantially perpendicular to said disc record for adjusting the contact pressure between said transducer head and said disc record.

3,881,190

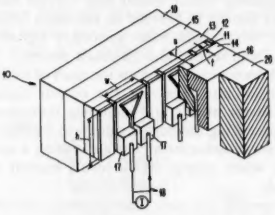
SHIELDED MAGNETORESISTIVE MAGNETIC TRANSDUCER AND METHOD OF MANUFACTURE THEREOF

George W. Brock, Boulder; Frank B. Shelledy, Longmont; Sidney H. Smith, Broomfield, and Arthur B. Wills, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 20, 1973, Ser. No. 399,218

Int. Cl. G11b *5/16, 5/22*

U.S. Cl. 360—113 **22 Claims**



1. A magnetic head for interacting with multi-wavelength information recorded as magnetized areas spaced along a recording medium, including:

a pair of magnetically permeable members having opposing faces spaced apart a fixed distance, on the order of and less than the shortest wavelength of the recorded information, the edge of each of the two members closest to the medium lying in the same plane; and

a transducing element, including a number of layers of material exhibiting the magnetoresistive effect disposed between the magnetically permeable members and having the edge closest to the medium lying in aforesaid plane.

3,881,191

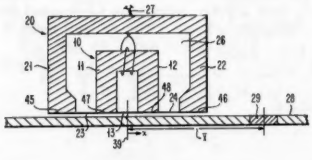
THREE-GAP MAGNETIC RECORDING HEAD HAVING A SINGLE FLUX SENSING MEANS

Robert I. Potter, and Michael W. Warner, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 19, 1972, Ser. No. 255,116

Int. Cl. G11b *5/27*

U.S. Cl. 360—121 **8 Claims**



1. A multigap magnetic head assembly for use in magnetic record/reproduce systems comprising:

a first inner magnetic core having first and second leg portions defining a first transducer gap therebetween;

a second outer magnetic core having a third and fourth leg portions, said first core maintained spaced apart from said second core, said first and third leg portions defining a second transducer gap therebetween and said second and fourth leg portions defining a third transducer gap therebetween wherein said first and said second and said third transducer gaps are substantially the same length;

a single flux sensing means linked with said first core means; said core assembly characterized by a sensitivity function

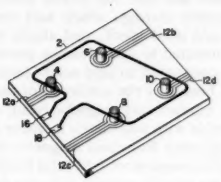
such that the magnetic field across the second and third outer transducer gaps is of a lesser magnitude and in the opposite direction than the magnetic field produced by the first transducer gap.

3,881,192

MAGNETIC RECORDER AND PRINTED CIRCUIT RECORDING HEAD THEREFOR

Dale O. Ballinger, Denver, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 24, 1973, Ser. No. 363,608
Int. Cl. G11b *5/20, 5/44*
U.S. Cl. 360—123 **8 Claims**



1. A magnetic recording head comprising;

an electrically insulating substrate having a predetermined pattern of apertures therein,

a plurality of recording pins located in said apertures and projecting above an adjacent surface of said substrate, said recording pins each exhibiting an operating characteristic characterized by a rapid transition between magnetization levels at predetermined transition points along a B-H curve representing an operation of said recording pins following a change in a magnetic field applied to a selected one of said recording pins, and

current carrying means supported on said substrate and providing separate current carrying paths having an ampere-turn relationship with each of said recording pins, said current carrying paths being located on both sides of said substrate and including first circuit means interconnecting said current carrying paths on one side of said substrate to form rows of electrically interconnected recording pins and second circuit means located on the other side of said substrate and interconnecting current carrying paths on the same side of said substrate to form electrically interconnected columns of said recording pins whereby each of said recording pins is arranged at a corresponding intersection of an X-Y matrix.

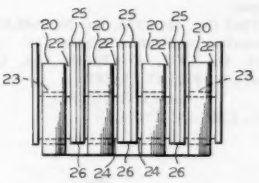
3,881,193

MULTI-CHANNEL MAGNETIC HEAD COMPRISING A PLURALITY OF SINGLE-TURN ELEMENTARY HEADS

Kenichi Fujimura, Neyagawa, and Takashi Tanaka, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 195,414, Nov. 3, 1971, abandoned. This application July 6, 1973, Ser. No. 377,137
Claims priority, application Japan, Nov. 7, 1970, 45-98583; Nov. 16, 1970, 45-01745; Nov. 16, 1970, 45-01746; Nov. 17, 1970, 45-01574; Mar. 24, 1971, 46-17420; Nov. 10, 1970, 45-11226[U]
Int. Cl. G11b *5/20, 5/27, 5/28*
U.S. Cl. 360—123 **10 Claims**

1. A multi-channel magnetic head composed of a stack of a plurality of elementary single turn head units, each unit comprising an individual ring type magnetic core having a record medium engaging face having a magnetic gap therein, two side surfaces prependicular to said record medium engaging face, and a central opening therethrough extending between said side surfaces, the central openings of the cores in the stack being aligned to define a bore, a conductive rod extending through said bore, and two conductive plates, one positioned on each side of said magnetic core and each having a portion between opposing side surfaces of adjacent cores in the stack and being electrically connected to said conductive rod and extending out from between adjacent cores in a direction other than the direction that the magnetic gap lies from



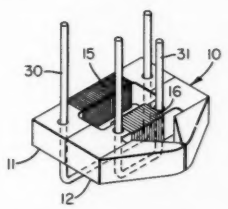
said conductive rod, a layer of insulating material between each two adjacent conductive plates in adjacent head units and insulating adjacent conductive plates in adjacent head units from each other, said adjacent conductive plates and intermediate insulating material separating said magnetic cores from each other, and transformer means coupled across the paid of conductive plates in each head unit.

3,881,194

ELECTROMAGNETICALLY SWITCHED RECORD/REPRODUCE HEAD HAVING SEPARATE WINDINGS AND CORE LEGS FOR EACH MODE

Alastair M. Heaslett, Redwood, and Beverley R. Gooch, Sunnyvale, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Dec. 17, 1973, Ser. No. 425,518
Int. Cl. G11b *5/20, 5/12, 15/02*
U.S. Cl. 360—123 **10 Claims**



1. A magnetic transducing head which has a recording and a reproducing operating mode and which may be electromagnetically switched between said operating modes, comprising a pair of pole pieces, each of said pole pieces having a smoothly lapped gap defining surface, said pair of pole pieces being symmetrically positioned with said gap defining surfaces in opposition to define a transducing gap therebetween, said gap containing a filler material;

a recording coil;

a reproducing coil;

a back core contiguous with said pole pieces and having a leg for receiving said recording coil and a leg for receiving said reproducing coil, each of said legs having a central coil receiving section, said respective coils each wound around said central coil receiving section of said particular leg, and each said leg providing a separate flux path; said recording and reproducing coil being electrically separated from each other, the impedance of each respective coil being selected to satisfy the requirements of the particular operating mode of said magnetic transducer head; and

electromagnetic means for selectively preventing an appreciable amount of magnetic flux from flowing through a

given leg when said magnetic transducing head is operating in a mode which does not employ said given leg.

3,881,195

TRANSDUCER CLEANING UNIT

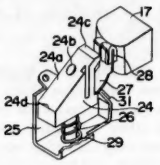
Kenji Ono; Koushin Ohba, and Tatuo Hioka, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 16, 1973, Ser. No. 406,854

Claims priority, application Japan, Oct. 16, 1972, 47-104291; Oct. 16, 1972, 47-120448; Oct. 16, 1972, 47-120449; Nov. 17, 1972, 47-133287

Int. Cl. G11b *5/40*

U.S. Cl. 360—128 **12 Claims**



1. A transducer cleaning unit for use in association with a magnetic tape player utilizing a magnetic tape housed in a container, said tape player including a magnetic head situated within a container receiving chamber which is provided for accommodating the tape container during operation of the tape player, said transducer cleaning unit comprising, in combination:

a solid block supported by a chassis of the tape player for movement between first and second positions in a direction perpendicular to a direction of transfer of the magnetic tape;

means for biasing said solid block to the first position, said solid block being moved to the second position against said biasing means in response to the placing of the container within the container receiving chamber;

a cleaning piece carried by said solid block for sweeping the magnetic head during reciprocal movement of said solid block between said first and second positions;

an elastic member through which said cleaning piece is carried by said solid block, said elastic member having one end connected to said cleaning piece and the other end rigidly connected to said solid block, said cleaning piece being biased by the resiliency of said elastic member so as to contact said magnetic head; and

means engageable with said elastic member for disengaging said cleaning piece from said magnetic head during the latter half of movement of said solid block from the first position to the second position and also from the second position to the first position, said cleaning piece sweeping said magnetic head during the first half of said movement of said solid block between said first and second positions.

DESIGN PATENTS

GRANTED APRIL 29, 1975

ERRATA

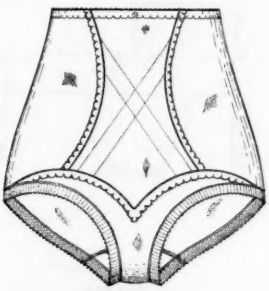
For CLASS	See PATENT NO.
D9-44	235,032

DESIGNS

APRIL 29, 1975

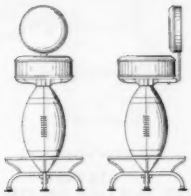
234,983
PIZZA
Alvin Hirsh, 150 Admiral Road, Buffalo, N.Y. 14216
Filed Aug. 8, 1973, Ser. No. 386,516
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—16

234,984
PANTY GIRDLE
Josie Gentile, Somerset, N.J., assignor to Maidenform, Inc., New York, N.Y.
Filed May 31, 1973, Ser. No. 365,434
Term of patent 7 years
Int. Cl. D2—*01*
U.S. Cl. D2—4



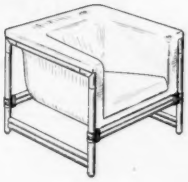
234,985
APRON
Bettty C. Kreisel, Sherman Oaks, Calif. (5440 Lindley Ave. 106, Encino, Calif. 91316)
Filed Oct. 2, 1973, Ser. No. 402,848
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—226

234,986
BAR STOOL OR THE LIKE
Cecilio I. Lazo De La Vega, P.O. Box 554, Valdosta, Ga. 31601
Original design application Sept. 7, 1972, Ser. No. 287,035. Divided and this application Apr. 11, 1974, Ser. No. 460,034
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—32

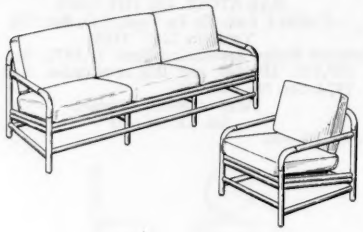


234,987
CHAIR
Carlos L. Lopez-Benitez, High Point, N.C., assignor to Windwood Incorporated, High Point, N.C.
Filed Feb. 16, 1973, Ser. No. 333,278
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—57

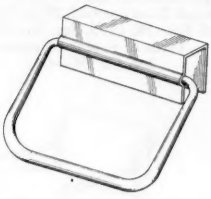
234,988
CHAIR
Carlos L. Lopez-Benitez, High Point, N.C., assignor to Windwood Incorporated, High Point, N.C.
Filed Feb. 16, 1973, Ser. No. 333,279
Term of patent 14 years
Int. Cl. D5—*01*
U.S. Cl. D6—69



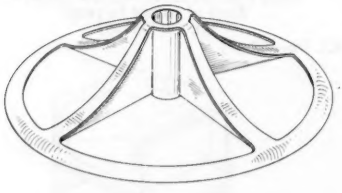
234,989
SEAT
Carlos L. Lopez-Benitez, High Point, N.C., assignor to Windwood Incorporated, High Point, N.C.
Filed Feb. 16, 1973, Ser. No. 333,277
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



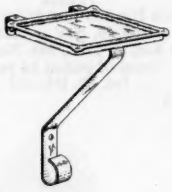
234,990
TOWEL HOLDER OR THE LIKE
Mildred L. Morgan, 1616 27th St. NW., Cedar Rapids, Iowa 52405
Filed Aug. 10, 1972, Ser. No. 279,493
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—99



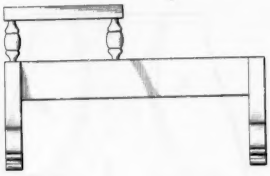
234,991
STAND FOR CHRISTMAS TREES OR THE LIKE
Emile L. Olivier, 10 Bairstow Circle, Georgetown, Ontario, Canada
Filed Aug. 13, 1973, Ser. No. 387,709
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—105



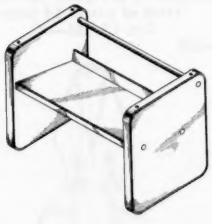
234,992
COMBINED SHELF AND BRACKET THEREFOR
Burton Burk, Plainview, N.Y., assignor to Burton Burk Inc., Wantagh, N.Y.
Filed Mar. 21, 1973, Ser. No. 343,232
Term of patent 3½ years
Int. Cl. D6—*06*
U.S. Cl. D6—132



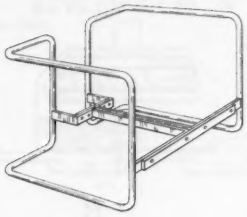
234,993
TABLE
Evalin S. Gilbert, 2121 N. Bay Shore Drive, Miami, Fla. 33137
Filed Nov. 29, 1972, Ser. No. 310,637
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



234,994
BOOKSHELF
Frank Joseph Stiene, Ridgewood, N.J., assignor to Mercedes-Benz of North America Inc., Montvale, N.J.
Filed Aug. 21, 1972, Ser. No. 282,576
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—184



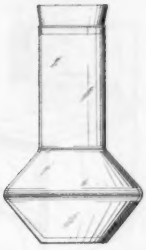
234,995
ADJUSTABLE FRAME FOR A FURNITURE SEAT
Kurt Brandle, 1379 Gilmer Drive,
Salt Lake City, Utah 84105
Filed May 7, 1973, Ser. No. 357,586
Term of patent 7 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



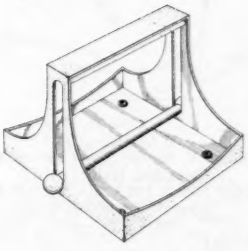
234,996
BACK FOR A DENTAL CHAIR
Sadayasu Ohta, Kyoto, Japan, assignor to Kabushiki
Kaisha Morita Seisakusho, Kyoto, Japan
Filed Jan. 20, 1971, Ser. No. 108,687
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—197

234,997
CUP-SAUCER ASH TRAY COMBINATION
James Wiley Stampley, Olivehurst, Calif.
(129 Swaab St., Las Vegas, Nev. 89110)
Filed Apr. 17, 1973, Ser. No. 351,858
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—3

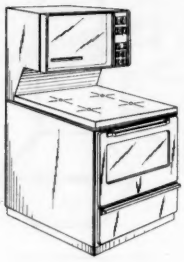
234,998
DECANTER WITH LID OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to
Owens-Illinois, Inc., Toledo, Ohio
Filed Aug. 27, 1973, Ser. No. 391,614
Term of patent 14 years
The term of this patent subsequent to Apr. 15, 1989,
has been disclaimed
Int. Cl. D7—*06*
U.S. Cl. D7—52



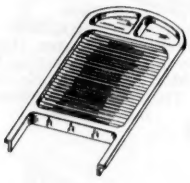
234,999
NAPKIN HOLDER
James Edward Stewart, Islington, Ontario, Canada,
assignor to J & G Productions Limited
Filed Mar. 5, 1973, Ser. No. 338,357
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—72



235,000
DOUBLE OVEN INDUCTION HEATING ELECTRIC RANGE
Philip H. Peters, Jr., Greenwich, and John L. Matrone, Schenectady, N.Y., assignors to Environment/One Corporation, Schenectady, N.Y.
Original design application Sept. 23, 1971, Ser. No. 183,288. Divided and this application Nov. 21, 1973, Ser. No. 417,965
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—118

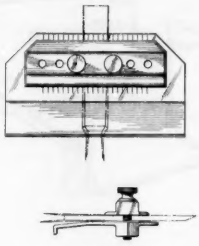


235,001
WASHBOARD
William V. Sunday, 9904 Manor Ave., Cleveland, Ohio 44104
Filed Feb. 2, 1973, Ser. No. 329,148
Term of patent 3½ years
Int. Cl. D7—*05*
U.S. Cl. D7—201

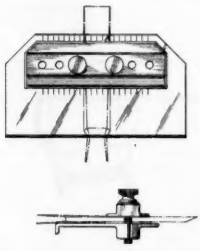


235,002
WASHBOARD
William V. Sunday, 9904 Manor Ave., Cleveland, Ohio 44104
Filed Feb. 2, 1973, Ser. No. 329,149
Term of patent 3½ years
Int. Cl. D7—*05*
U.S. Cl. D7—201

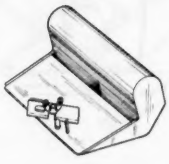
235,003
CHISEL SHARPENING JIG
Richard Insalaco, 596 Norwich Parkway, Quaker Hill, Conn. 06375
Filed Dec. 12, 1972, Ser. No. 314,444
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—72



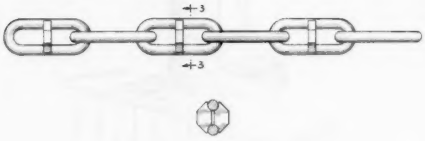
235,004
CHISEL SHARPENING JIG
Richard Insalaco, 596 Norwich Parkway, Quaker Hill, Conn. 06375
Filed Dec. 12, 1972, Ser. No. 314,445
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—72



235,005
CARPET CUTTER
Lawrence R. Sutton, Detroit, Carl P. Ranno, Grosse Pointe Park, and Kenneth E. Hewson, Farmington, Mich., assignors to Performance Industries, Inc., Pontiac, Mich.
Filed Oct. 6, 1972, Ser. No. 298,928
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—98

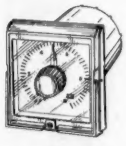


235,006
POULTRY FEEDER CHAIN
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Original design application Mar. 11, 1971, Ser. No. 123,494, now Patent No. 288,141. Divided and this application Dec. 13, 1972, Ser. No. 314,856
Term of patent 14 years
Int. Cl. D12—*05;* D8—*99*
U.S. Cl. D8—261

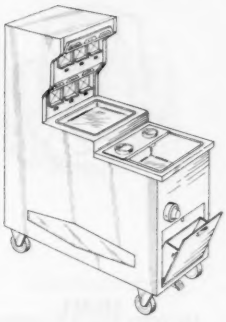


235,007
BOTTLE
Morris Braun, Chicago, Ill., assignor to W. Braun Company, Chicago, Ill.
Filed July 16, 1973, Ser. No. 379,441
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—149

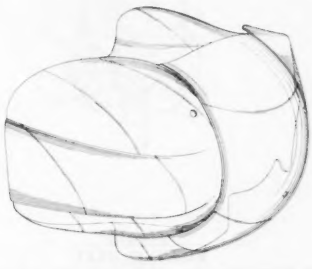
235,008
TIMER
Minoru Ishikawa, Kyoto, Japan, assignor to Omron Tateisi Electronics Co.
Filed Apr. 7, 1972, Ser. No. 242,274
Claims priority, application Japan Oct. 8, 1971
Term of patent 14 years
Int. Cl. D10—*03*
U.S. Cl. D10—40



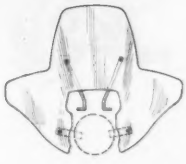
235,009
PORTABLE BAR
Frank B. Thompson, 719 Tammy Drive, San Antonio, Tex. 78216
Filed June 11, 1973, Ser. No. 368,971
Term of patent 14 years
Int. Cl. D12—*02;* D6—*06*
U.S. Cl. D12—22



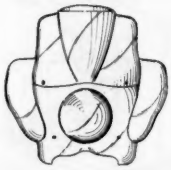
235,010
MOTORCYCLE FAIRING
Daniel Hugon, 38 Rue Pasteur, Moirans-en-Montagne, Jura, France
Filed May 24, 1973, Ser. No. 363,560
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—182



235,011
MOTORCYCLE SHIELD
H. Dwight Anderson and David L. Travis, both of 2624 W. River Road, Minneapolis, Minn. 55406
Filed July 13, 1973, Ser. No. 379,117
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—182

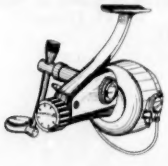


235,012
MOTORCYCLE FAIRING
Daniel Hugon, 38 Rue Pasteur, Moirans-en-Montagne, Jura, France
Filed Oct. 25, 1973, Ser. No. 409,618
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—182

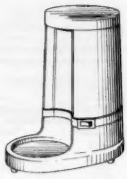


235,013
MOTORCYCLE FAIRING
Daniel Hugon, 38 Rue Pasteur, Moirans-en-Montagne, Jura, France
Filed Oct. 25, 1973, Ser. No. 409,617
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—182

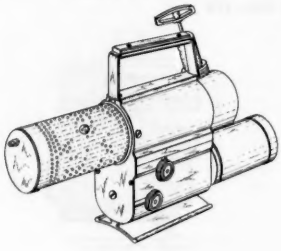
235,014
FISHING REEL
Yutaka Miyakawa, Ibaraki, and Koichi Kitafuji, Kyoto, Japan, assignors to Shimano Industrial Company Limited, Osaka, Japan
Filed Apr. 1, 1974, Ser. No. 456,480
Claims priority, application Japan Oct. 4, 1973
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



235,015
WATER PURIFIER
Emanuel Stern, Mount Kisco, N.Y., assignor to Dynek Corporation, Port Chester, N.Y.
Filed Aug. 10, 1973, Ser. No. 387,246
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3

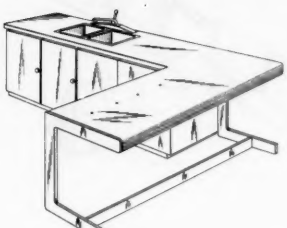


235,016
THERMO FOGGING UNIT
Richard H. Avant, Rochester, N.Y., assignor to Bernz-O-Matic Corporation, Rochester, N.Y.
Filed Apr. 2, 1973, Ser. No. 347,282
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—18

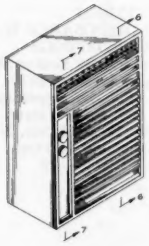


235,017
SPRAY HEAD
Benjamin C. Beeler, Sepulveda, Calif. (19922 Hemingway, Canoga Park, Calif. 91306)
Filed Aug. 3, 1972, Ser. No. 277,560
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—34

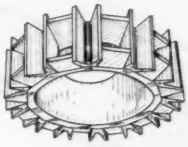
235,018
COMBINED COUNTER, SINK, STORAGE AND INDUCTION HEATING ELECTRIC COOKING UNIT
Philip H. Peters, Jr., Greenwich, and John L. Matrone, Schenectady, N.Y., assignors to Environmental/One Corporation, Schenectady, N.Y.
Original design application Sept. 23, 1971, Ser. No. 183,289. Divided and this application Dec. 12, 1973, Ser. No. 424,106
Term of patent 14 years
Int. Cl. D6—*04;* D7—*02;* D23—*02*
U.S. Cl. D23—50



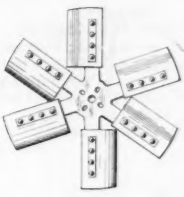
235,019
MARINE AIR CONDITIONER
Paul Bunten, 1221 Barrow Dale Road, Rydal, Pa. 19136
Filed Apr. 12, 1973, Ser. No. 350,440
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—142



235,020
INJECTION NOZZLE RIM FOR VENTILATING APPARATUS
Jorgen Holt, Naestved, Denmark, assignor to Nordisk Ventilator Co. Aktieselskab, Naestved, Denmark
Filed July 27, 1973, Ser. No. 382,766
Claims priority, application Denmark Feb. 1, 1973
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163

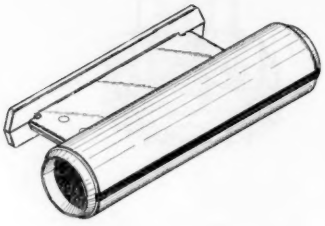


235,021
FAN
Theodore A. Fulton, Seattle, Wash., assignor to Flex-A-Lite Corporation, Tacoma, Wash.
Filed Apr. 29, 1974, Ser. No. 465,115
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—165

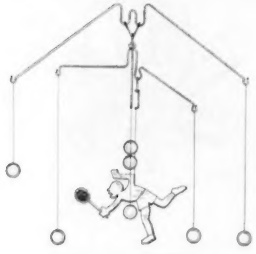


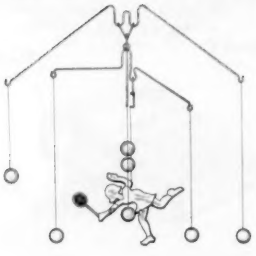
235,022
CALCULATOR
John S. Kovacs, East Norriton, Pa., assignor to Sperry Rand Corporation, New York, N.Y.
Filed July 12, 1973, Ser. No. 378,614
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

235,023
COMBINED MICROPHONE HOLDER WITH INTEGRAL CORD STORAGE THEREFOR
Samuel F. Swayze, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed June 4, 1973, Ser. No. 366,400
Term of patent 14 years
Int. Cl. D14— *03, 99*
U.S. Cl. D26—14 J

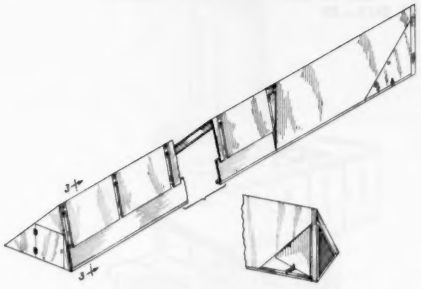


235,024
MOBILE OR SIMILAR ARTICLE
Loren M. Bloom, 360 Old Mill Road, Valley Cottage, N.Y. 10989
Filed July 18, 1973, Ser. No. 380,135
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—1 C





235,025
POULTRY HOUSE VENTILATION PLENUM
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Filed July 10, 1972, Ser. No. 270,317
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2



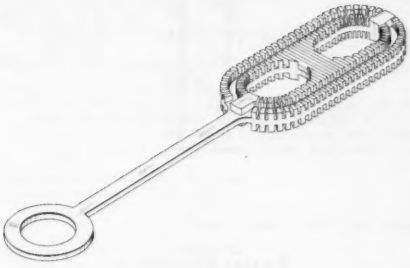
235,026
RETRACTABLE DOG LEASH
Manfred Bogdahn, Drogensee 30a, 2000 Hamburg 266, Germany
Filed Oct. 25, 1973, Ser. No. 409,720
Claims priority, application Germany Sept. 26, 1973
Term of patent 7 years
Int. Cl. D30—*04*
U.S. Cl. D30—39

235,027
DOG SUPPORTED DISPOSABLE WASTE BAG FOR DROPPINGS
John P. Francis, 20 Boston St., Haverhill, Mass. 01830
Continuation-in-part of design application Ser. No. 238,719, Mar. 27, 1972, now Patent No. 229,321.
This application July 16, 1973, Ser. No. 379,366
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—99

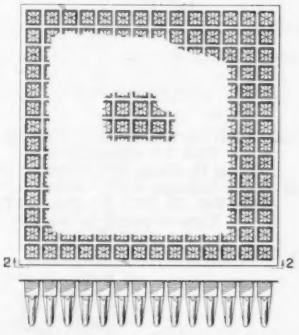
235,028
DOG SUPPORTED DISPOSABLE WASTE BAG FOR DROPPINGS
John P. Francis, 20 Boston St., Haverhill, Mass. 01830
Filed July 16, 1973, Ser. No. 379,367
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—99

235,029
COMBINATION ROLLER SKI AND SKATE POLE
Oscar Wilje, Sturegatan 44, S–79100 Falun, Sweden
Filed July 16, 1973, Ser. No. 379,497
Claims priority, application Sweden Nov. 17, 1972
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—14 D

235,030
BUBBLE BLOWING WAND
Louis J. Ziff, Philadelphia, Pa., assignor to Larami Corporation, Philadelphia, Pa.
Filed Dec. 26, 1972, Ser. No. 318,688
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 H

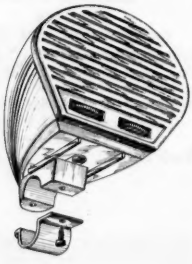


235,031
BEDDING PLANT TRAY
George E. Jansen, Cedar Grove, N.J., assignor to Peter K. Krikorian and Haig K. Krikorian, Fresno, Calif., fractional part interest to each
Filed Dec. 14, 1972, Ser. No. 315,144
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 R

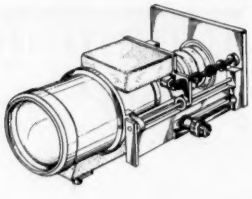


235,032
COMBINED BOTTLE AND CLOSURE THEREFOR
Herbert Ashley Atkins, "Latymers," Pinkleys Drive, Pinkleys Green, Maidenhead, England
Filed Oct. 31, 1968, Ser. No. 14,245
Claims priority, application Great Britain May 1, 1968
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—44

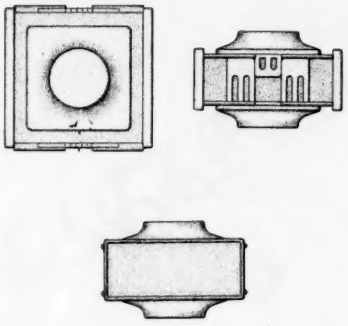
235,033
RADIO HOUSING
Joachim Engelmann, 57, 3002 Wennebostel, Hannover, Germany
Filed Dec. 19, 1972, Ser. No. 316,501
Claims priority, application Germany June 26, 1972
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



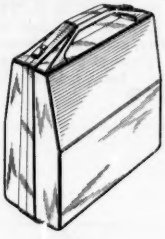
235,034
QUICK CHANGE RANGE EXTENDER SYSTEM FOR TV ZOOM LENS
Wayne D. Clegg, 6604 Valmont St., Tujunga, Calif. 91042
Filed Feb. 22, 1973, Ser. No. 334,715
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 E



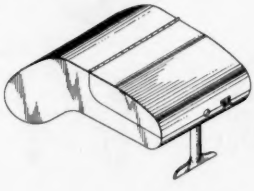
235,035
BLOOD FILTER
David J. Rosenberg, 12 Francis Court, Glen Cove, N.Y. 11542
Filed June 16, 1972, Ser. No. 263,494
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 R



235,036
CARRYING CASE FOR TYPEWRITER
Shigeaki Kuramochi, Tokyo, Japan, assignor to Louis Marx & Co., Inc., New York, N.Y.
Filed Apr. 6, 1973, Ser. No. 348,564
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



235,037
CARRYING AND STORAGE CASE FOR PAINTERS' MATERIALS OR THE LIKE
James D. Jolly, McQuady, Ky. 40153
Filed Apr. 10, 1973, Ser. No. 350,612
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF APRIL, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. & M. Cousin et Cie Establissements Cousin Freres: *See—*
Cousin, Maurice Claude, 3,879,788.

A. Sutter AG: *See—*
Principe, Rene; and Hugentobler, Jakob, 3,879,797.

A-T-O Inc.: *See—*
Schnier, Edward A., 3,880,115.

A. W. Faber-Castell: *See—*
Katz, Otto, 3,880,530.

AB Bahco Ventilation Corporation: *See—*
Gustavsson, Karl-Axel G.; and Persson, Holger A., 3,880,628.

Abbott Laboratories: *See—*
Standley, Wendell Evert; Adams, Norman David; and Phelps, David Allen, 3,880,695.

Abe, Haruhiko, to Mitsubishi Denki Kabushiki Kaisha. Process for preparing semiconductor. 3,880,684, Cl. 156-8.000.

Abe, Hiroaki: *See—*
Nakamura, Hiromi; Mochizuki, Zenichi; Abe, Hiroaki; and Komiyama, Yosizo, 3,880,055.

Abe, Jinnosuke: *See—*
Hagitani, Akira; Muramatsu, Ichiro; Sakakibara, Shumpei; Abe, Jinnosuke; and Watanabe, Tetsuo, 3,880,823.

Abe, Tsuwao: *See—*
Mizuhara, Yasushi; Kikumoto, Takashi; Abe, Tsuwao; Hitomi, Hiroyuki; Ochiai, Masayasu; and Itoh, Tuguaki, 3,881,148.

Abell, Roy F., Jr., to Eaton Corporation. Hydraulic valve gear. 3,880,127, Cl. 123-90.350.

Abshear, Harold R. Heating systems for fireplaces. 3,880,141, Cl. 126-121.000.

ACF Industries, Incorporated: *See—*
Pietsch, Ervin I., 3,880,010.

Adachi, Takeshi; and Nakada, Akira, to Nippon Gakki Seizo Kabushiki Kaisha. Reverberation-imparting apparatus using a bucket brigade device. 3,881,057, Cl. 179-1.00J.

Adams, Clarence R., to Tridair Industries. Cantilevered telescopic drapery support. 3,879,800, Cl. 16-96.00D.

Adams, Francis T., Jr. Audio visual system. 3,880,507, Cl. 353-17.000.

Adams, Norman David: *See—*
Standley, Wendell Evert; Adams, Norman David; and Phelps, David Allen, 3,880,695.

Adamson, Alan. Can treatment tool. 3,880,026, Cl. 82-47.000.

Advance Power Incorporated: *See—*
Wanlass, Cravens L., 3,881,146.

Aero-Dyne Manufacturing, Inc.: *See—*
Culpepper, Clifford, Jr.; and Stuck, Robert M., 3,880,062.

Agency of Industrial Science & Technology: *See—*
Tarui, Yasuo; Komiya, Yoshio; and Teshima, Hiroo, 3,880,675.

Agfa-Gevaert Aktiengesellschaft: *See—*
Eppe, Rudolf; Schnall, Gunther; Hosselbarth, Helmut; and Schiffl, Heinz, 3,880,521.
Himmelmann, Wolfgang, 3,880,665.

Agrecology, Inc.: *See—*
Houston, Richard K.; Ratzlaff, Alvin E.; and Cruikshank, Max W., 3,880,099.

Ahlgren, Nils Harald. Apparatus for lifting and lateral shifting of heavy constructions. 3,880,293, Cl. 212-11.000.

Ailett, Claude; Bigou, Jacques; and Bretecher, Yves, to Societe Lannionaise d'Electronique Sle-Citerel. Pseudo-random binary sequence generator. 3,881,099, Cl. 235-152.000.

Airrigation Engineering Company, Inc.: *See—*
Horne, Frederick F., 3,880,176.

Aisin Seiki Kabushiki Kaisha: *See—*
Miyao, Takayuki; Oya, Minoru; Yamada, Masatoshi; Kuno, Toshitaka; Yamaguchi, Masao; Katagiri, Haruo; Hattori, Katsuhiko; Sato, Masanori; and Toyota Jidosha Kogyo Kabushiki Kaisha, 3,880,017.

Ajinomoto Co., Inc.: *See—*
Kageyama, Katsusuke; Maeyashiki, Isamu; Kubota, Koji; Konishi, Shinpachi; and Okumura, Shinji, 3,880,741.
Miyazawa, Masashi; Sasaji, Ichiro; Hachiya, Tomoyoshi; Toi, Koji; Uzuki, Teruo; and Sato, Naotake, 3,880,918.
Yamanaka, Shigeru; Kashima, Nobukazu; and Mitsugi, Koji, 3,880,718.

Akashi, Goro; Fujiyama, Masaaki; Yama, Yasuyuki; and Miyake, Tokuaki, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 3,881,046, Cl. 117-216.000.

Akerhielm, George: *See—*
Raineri, Carlo J.; Mandy, Zoltan P.; Lesczynski, Michael; Styron, James S.; and Akerhielm, George, 3,880,756.

Akers, Edward G. Safety cap and container. 3,880,313, Cl. 215-211.000.

Akers, Edward G. Container and safety cap. 3,880,314, Cl. 215-214.000.

Akiyama, Seikichi; and Kozuka, Hirotsugu, to Hitachi, Ltd. Method of producing plate single-crystal of gadolinium molybdate. 3,880,984, Cl. 423-263.000.

Aktiebolaget Bofors: *See—*
Ericson, John Einar; and Anderson, Thrue Roland, 3,879,867.

Alaimo, Robert J.; and Goldenberg, Marvin M., to Morton-Norwich Products, Inc. 2-(Substituted amino) quinolizinium bromides. 3,880,868, Cl. 260-296.00B.

Albany International Corporation: *See—*
Grieves, Lowell G.; and Wightman, William S., 3,879,820.

Alberts, Herbert. Removable garment button. 3,879,808, Cl. 24-109.000.

Alcock, Leslie, to British Petroleum Company Limited, The. Multi-bed reactors. 3,880,961, Cl. 261-16.000.

Alcott, Charles A.: *See—*
McLaren, Robin A.; Alcott, Charles A.; and Nasser, William E., 3,880,790.

Alden Self-Transit Systems Corporation: *See—*
Corkum, James L., 3,880,264.

Alexenko, Vladimir Iosifovich: *See—*
Dinzburg, Boris Nisonovich; Smetkin, Jury Alexandrovich; Alexenko, Vladimir Iosifovich; Mikhailov, Vsevolod Andreevich; Lorant, Ivan, Dr.; Seltenreich, Gyozo; Keszei, Jeno; Marton, Gyorgy; Balazsfai, Albert; Donath, Jeno; and Bolcskei, Erno, 3,880,970.

Allegheny Ludlum Industries, Inc.: *See—*
Bloom, William M., 3,880,649.
Hartline, Albert G., III, 3,880,654.

Allen, William Glenn, Jr. Surgical suture cutter and remover. 3,879,846, Cl. 30-124.000.

Allied Chemical Corporation: *See—*
Booth, Frederick C., 3,880,379.
Lees, Robert; and Braswell, William Dorne, 3,880,338.
Wamser, Christian A., 3,880,980.

Allmanna Svenska Elektriska Aktiebolaget: *See—*
Svensson, Lennart, 3,880,376.

Alonso Astarloa, Jose Manuel. Image projector. 3,880,511, Cl. 353-79.000.

Althause, Joseph F.; and Appel, Albert W., to Hughes Aircraft Company. Sighting device. 3,880,529, Cl. 356-251.000.

Alza Corporation: *See—*
Spraggins, Robert L., 3,880,906.
Stepno, Norman Howard, 3,880,164.

Amann, August; Koenig, Horst; Thieme, Peter; Giertz, Hubert; and Kretzschmar, Rolf. Anticonvulsant. 3,881,011, Cl. 424-270.000.

Amano, Hisao: *See—*
Ueda, Akiteru; Amano, Hisao; and Kawakami, Naoe, 3,881,147.

Amchem Products, Inc.: *See—*
Cooke, Anson Richard; and Starke, George Robert, 3,880,643.

Amdahl Corporation: *See—*
Larsen, Dee E.; and Clements, Michael R., 3,881,173.

Amerace Esna Corporation: *See—*
Morgan, Donald F., 3,879,876.

American Air Filter Company, Inc.: *See—*
Hensiek, Charles R.; and Timms, Rayford W., 3,880,061.

American Chain & Cable Company, Inc.: *See—*
Khondker, Azizul H., 3,880,086.

American Cyanamid Company: *See—*
Panzer, Hans Peter; and McAdams, Louis Vincent, 3,880,753.
Singh, Balwant, 3,880,881.
Wright, Donald Perry, Jr.; Barringer, Donald Frederic, Jr.; and McKay, Donald Edward, 3,880,904.

American Home Products Corporation: *See—*
Greenspan, George; and Rees, Richard W., 3,880,895.
Herbst, David R.; and Ledig, Kurt W., 3,880,866.
Ledig, Kurt W.; and Herbst, David R., 3,880,870.
Sellstedt, John H., 3,880,835.
Sellstedt, John H., 3,880,876.
Sellstedt, John H.; and Teller, Daniel M., 3,880,877.
Wolf, Milton; Sellstedt, John H.; and Fenichel, Richard L., 3,881,019.

American Hospital Supply Corporation: *See—*
McPhee, Charles J., 3,880,311.
Starr, Albert; and Swendson, David L., 3,880,169.

American Indian Development Corporation: *See—*
O'Hare, Harry M., 3,880,532.

American LaFrance Inc.: *See—*
Vorkapich, Theodore, 3,880,239.

American Optical Corporation: *See—*
Deeg, Emil W.; Krohn, David A.; and Martel, Leslie B., 3,880,634.
Johnson, John R., 3,880,525.
Shaw, Robert R.; and Snitzer, Elias, 3,880,663.

American Polarizers, Inc.: *See—*
Davidyan, G. Kurt; Kraus, Richard W.; Patrick, Robert D.; and Scott, Leo R., 3,880,496.

American Seating Company: *See—*
Hartman, Arlin P., 3,881,140.

American Technical Industries, Inc.: *See—*
Gelardi, Joseph T., 3,879,829.

American Velcro, Inc.: *See—*
Kojabashian, Charles, 3,880,500.

Ames, Irving; D'Heurle, Francois M.; and Horstmann, Richard E., to International Business Machines Corporation. Copper doped aluminum conductive stripes and method therefor. 3,879,840, Cl. 29-589.000.

AMF Incorporated: *See—*
Neville, Richard Ernest Gartside, 3,879,857.

Amoco Production Company: *See—*
Donham, James E., 3,880,764.
Farr, John B.; and Ward, Ronald W., 3,881,168.

AMP Incorporated: *See—*
Collier, John Covell; and Rickards, David William, 3,880,488.

Ampex Corporation: *See—*
Heaslett, Alastair M.; and Gooch, Beverley R., 3,881,194.

Amtsberg, Lester A.; and Wallace, William K., to Chicago Pneumatic Tool Company. Crimping mechanism in a nut runner. 3,880,023, Cl. 81-10.000.

Ancra Corporation: *See—*
Prete, Ernest, Jr.; and Knox, Howard Thomas, 3,879,810.

Anderson, Arnold L., to Michigan Chemical Corporation. Polyurethane plastic compositions containing bis-aryloxy flame retardants. 3,880,800, Cl. 260-45.90R.

Anderson, Arnold L., to Michigan Chemical Corporation. Polyolefin plastic compositions containing halogenated aryl compounds as flame retardants. 3,880,801, Cl. 260-45.90R.

Anderson, Carl G., Jr., to Chicago Pneumatic Tool Company. Exhaust noise attenuating system with muffler for pneumatic tools. 3,880,245, Cl. 173-163.000.

Anderson, Donald E.; Yorston, James K.; and McLauchlan, Thomas A., to Q.M. Machine Works Ltd. Method and apparatus for shearing trees. 3,880,216, Cl. 144-309.0AC.

Anderson, Edwin A. Jar for well strings. 3,880,249, Cl. 175-302.000.

Anderson, Lawrence G., to TRW Inc. Nonmetallic bearing housing. 3,880,480, Cl. 308-74.000.

Anderson, Paul L.; and Brittain, Darryl A., to Sandoz-Wander, Inc. 4-(2-Naphthyl)-4-alkyl-3-buten-2-ones. 3,880,932, Cl. 260-590.000.

Anderson, Richard N., to V. E. Anderson Mfg. Co. Sliding screen door. 3,879,894, Cl. 49-420.000.

Anderson, Robert Craig; and Lovie, John Cormack, to Imperial Chemical Industries Limited. Smoking mixtures. 3,880,172, Cl. 131-143.000.

Anderson, Thrue Roland: *See—*
Ericson, John Einar; and Anderson, Thrue Roland, 3,879,867.

Ando, Shizuo, to Pioneer Electronic Corporation. Signal discriminator of an automatic telephone answering apparatus. 3,881,061, Cl. 179-6.00R.

Andoh, Shizuo: *See—*
Nakayama, Norihiko; Furuta, Hiroshi; Andoh, Shizuo; and Urade, Toshinori, 3,881,129.

Andou, Minoru: *See—*
Mizukoshi, Kanji; Andou, Minoru; and Okuno, Hisao, 3,879,837.

Andre, Marcel; Legrand, Bernard; and Montigaud, Jean-Marie, to Commissariat a l'Energie Atomique. Method of regulation by sampling partial pressure of a gas mixture contained in at least one enclosure and a device for the application of said method. 3,881,093, Cl. 235-150.100.

Andres, Rudolf, to Daimler-Benz Aktiengesellschaft. Safety belt system with a wind-up roller having a spring-loaded shaft. 3,880,364, Cl. 242-107.400.

Anton, Miguel Molina, to International Standard Electric Corporation. Tumble detector. 3,880,108, Cl. 116-114.0AH.

Antonucci, Joseph M.: *See—*
Wall, Leo A.; and Antonucci, Joseph M., 3,880,943.

Aoki, Katsuo: *See—*
Mima, Hiroyuki; Matsuzawa, Tai; Aoki, Katsuo; Hirai, Shin-Ichiro; Ikenaga, Toshiaki; and Okada, Yoshihiro, 3,881,012.

Aoki, Yoshiaki: *See—*
Kimura, Sachio; and Aoki, Yoshiaki, 3,879,932.

Aoyama, Mitsugu, to Nihon Jescoal Industry Co., Ltd.; and Aoynama, Mitsugu. Dust and mist collector. 3,880,623, Cl. 55-230.000.

Aoynama, Mitsugu: *See—*
Aoyama, Mitsugu, 3,880,623.

Apostoleris, Theodore G.; and Callahan, Marion L., to Ford Motor Company, by said Apostoleris. Method for forming a remote annular rim of plastic material. 3,880,978, Cl. 264-328.000.

Appel, Albert W.: *See—*
Althause, Joseph F.; and Appel, Albert W., 3,880,529.

Applied Power Inc.: *See—*
Sessody, Donald W., 3,880,046.

Arai, Osamu; Kikuchi, Kaoru; and Ogawa, Tomoyuki, to Hitachi, Ltd. Frame manufacturing apparatus. 3,879,979, Cl. 72-338.000.

Archakov, Valery Ivanovich; Sosnovik, Mikhail Iosifovich; and Meister, Vyacheslav Vladimirovich. Device for color picture reproduction. 3,881,182, Cl. 358-69.000.

Archer, J. F. Fuse clamp file. 3,879,778, Cl. 7-17.000.

Arenson, Simon Weil. Method of providing hamburger patties that do not adhere together while packaged and that can be easily separated. 3,881,029, Cl. 426-274.000.

Armstrong, Henry P., to Diach Products Incorporated. Shower curtain edge retainer. 3,879,806, Cl. 24-73.0CH.

Armstrong, John Keith: *See—*
Urban, John A.; Hopkins, Gary L.; and Armstrong, John Keith, 3,880,473.

Arnar-Stone Laboratories, Inc.,: *See—*
Prillig, Elliott B.; Gardella, Libero A.; and Knuth, Albert R., 3,880,116.

Arneklev, Duane R.: *See—*
Baker, Don R.; Teach, Eugene G.; and Arneklev, Duane R., 3,880,642.

Arnett, Lawrence E., to Ford Motor Company. Inlet insert. 3,880,317, Cl. 220-86.00R.

Arnold, Don C.: *See—*
Cole, George S.; Ritzenthaler, Richard L.; and Arnold, Don C., 3,880,400.

Arnold, Orlan M.; and Vancini, Carlo A., to Peabody ABC Corporation. Apparatus for washing gases and removing liquid entrained. 3,880,624, Cl. 55-242.000.

Arseneault, Paul J., to International Business Machines Corporation. Article exchanging grapples. 3,880,294, Cl. 214-1.00B.

Arthur Cox & Sons: *See—*
Cox, Arthur T., 3,879,912.

Asada, Suekichi, to Kabushiki Kaisha Tokai Tekkosha. Portable power wrench. 3,880,024, Cl. 81-57.340.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Mimura, Akio; Hayakawa, Shiro; and Iguchi, Takashi, 3,880,740.

Ashill, Patrick Ralph; and Foster, David Norman, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Direct lift control of aircraft. 3,880,384, Cl. 244-42.00D.

Ashimori Kogyo Kabushiki Kaisha: *See—*
Ichioka, Eiji, 3,880,058.

Ashray Samig, Inc.: *See—*
Raichel, Michael Baruch, 3,880,567.

Askco Engineering Corporation: *See—*
Beck, Erich; Robbins, Albert L.; and Birdsall, John C., 3,880,564.

Asselin, Andre A.: *See—*
Demerson, Christopher A.; Humber, Leslie G.; Asselin, Andre A.; Jirkovsky, Ivo; and Dobson, Thomas A., 3,880,853.

Associated Electrical Industries Limited: *See—*
Thanawala, Hemesh Laxmidas, 3,881,137.

Atlantic Richfield Company: *See—*
Uhl, George A., 3,880,300.

Atterbury, Thomas J.: *See—*
Goodrich, Baxter D.; and Atterbury, Thomas J., 3,880,195.

Atwater, Wayne G., to Triax Company, The. Spacer element for structural unit. 3,879,915, Cl. 52-758.00C.

Auble, Ronald E.; and Coleman, Wells, to Gleason Works, The. Coupling device having means for relieving circumferential stresses. 3,880,267, Cl. 192-108.000.

Aucktor, Erich: *See—*
Welschof, Hans-Heinrich; and Aucktor, Erich, 3,879,960.

Augart, Dietmar: *See—*
Scheuermann, Horst; Mach, Wolfgang; and Augart, Dietmar, 3,880,869.

Augustin, Eugene H.; Johnson, Roger E.; and Rakestraw, Thomas L., to Ford Motor Company. Vacuum glass stripping apparatus. 3,880,337, Cl. 225-96.500.

Automated Packaging Systems, Inc.: *See—*
Lerner, Hershey, 3,879,918.

Autoquip Corporation: *See—*
Richards, Lawrence I., 3,880,259.

Auxiliary Brake Systems, Inc.: *See—*
Besoyan, Kirk, 3,880,262.

Avakian, Emik A., to EPIS Corporation. Apparatus and system for interconnecting circuits and electronic components. 3,880,486, Cl. 339-17.00M.

Ayerst, McKenna and Harrison Limited: *See—*
Demerson, Christopher A.; Humber, Leslie G.; Asselin, Andre A.; Jirkovsky, Ivo; and Dobson, Thomas A., 3,880,853.

B.D.K. Ltd., Inc.: *See—*
Daskalon, Leonard G.; Courduvelis, Constantine I.; and Koukos, Theodore, 3,880,662.

B. F. Goodrich Company, The: *See—*
Dickens, Elmer D., Jr., 3,880,802.
Srail, Raymond C., 3,880,787.
Taylor, Ray D., 3,880,836.
Tucker, Harold A.; and Kemp, Richard V., 3,880,957.

B. & J. Manufacturing Company: *See—*
Jensen, Wayne E.; and Stanfield, Charles Keith, 3,879,825.

Baardsen, Edward Lund, to Ford Motor Company. Method of welding galvanized steel. 3,881,084, Cl. 219-121.0LM.

Baatrup, Johannes Vagn: *See—*
Termansen, Poul Erik; and Baatrup, Johannes Vagn, 3,880,554.

Babcock & Wilcox Company, The: *See—*
Marshall, David M., 3,880,570.

Babcock & Wilcox Limited: *See—*
Loevenich, Josef, 3,880,366.

Babson, Arthur L., to Warner-Lambert Company. Diagnostic reagent. 3,880,714, Cl. 195-99.000.

Babson Bros. Co.: *See—*
Shulick, Robert J., 3,880,120.

Bach, Jean. Process for the separation of ergotamine. 3,880,734, Cl. 204-155.000.

Bach, Nicholas J.; and Kornfeld, Edmund C., to Eli Lilly and Company. Ergoline dimers. 3,880,856, Cl. 260-285.500.

Bachand, George M. Tag assembly for animal collar or the like. 3,879,870, Cl. 40-21.00C.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See*—
Rohr, Wolfgang; Koenig, Karl-Heinz; and Fischer, Adolf, 3,880,903.
Scheuermann, Horst, 3,880,857.
Scheuermann, Horst; and Hell, Peter-Matthias, 3,880,859.

Baer, Karl; Elliehausen, Heinrich; Hohenschutz, Heinz; Strohmeyer, Max; and Zirker, Guenter, to BASF Aktiengesellschaft. Manufacture of aliphatic alcohols. 3,880,940, Cl. 260-639.0HF.

Bailey, David S.; and Shea, Michael D., to Eastman Kodak Company. Triazolium salt photoreductive imaging. 3,880,659, Cl. 96-48.00R.

Bailey, Ralph I., to Raymond Lee Organization, Inc., The, a part interest. Fishing device. 3,879,880, Cl. 43-17.000.

Bain, Glenn E., to Raymond Lee Organization, Inc., The, a part interest. Magnetic ironing board. 3,879,869, Cl. 38-103.000.

Baisch, Stephen J. Oscillating shower head. 3,880,357, Cl. 239-380.000.

Baker, Don R.; Teach, Eugene G.; and Arneklev, Duane R., to Stauffer Chemical Company. Bis-anilide compositions as algicidal agents. 3,880,642, Cl. 71-67.000.

Baker Perkins Inc.: *See*—
Hopfe, Dieter Horst, 3,880,346.

Baker, Thompson A.; Balsiger, Melvin M.; Considine, Kevin T.; and Litsjo, Herbert E., to Tektronix, Inc. Separable-chamber electron-beam tube including means for puncturing a pressure seal therein. 3,881,125, Cl. 313-237.000.

Balasubramanyan, Sugavanam; and Fox, Roland Thomas Victor, to Imperial Chemical Industries Limited. Anti-bacterial process using substituted thiadiazoles. 3,881,010, Cl. 424-270.000.

Balazsfai, Albert: *See*—
Dinzburg, Boris Nisonovich; Smetkin, Jury Alexandrovich; Alexenko, Vladimir Iosifovich; Mikhailov, Vsevolod Andreevich; Lorant, Ivan, Dr.; Seltenreich, Gyozo; Keszei, Jeno; Marton, Gyorgy; Balazsfai, Albert; Donath, Jeno; and Bolcskei, Erno, 3,880,970.

Baldieri, Francesco; and Borgianni, Carlo, to Snam Progetti S.p.A. Process for the treatment of amorphous carbon or graphite manufactured articles, for the purpose of improving their resistance to oxidation, solutions suitable for attaining such purpose and resulting product. 3,881,039, Cl. 427-294.000.

Balevski, Anguel Tonchev; and Nikolov, Ivan Dimov, to Institut Po Melalognanie I Technologia No. Metalite. Method for continuous casting of metals. 3,880,221, Cl. 164-55.000.

Ballenger, William G., to Central Specialties Co. Cord storage reel assembly. 3,880,378, Cl. 242-96.000.

Ballinger, Dale O., to Honeywell Inc. Magnetic recorder and printed circuit recording head therefor. 3,881,192, Cl. 360-123.000.

Balsiger, Melvin M.: *See*—
Baker, Thompson A.; Balsiger, Melvin M.; Considine, Kevin T.; and Litsjo, Herbert E., 3,881,125.

Bamberger, Carlos E.: *See*—
Richardson, Donald M.; and Bamberger, Carlos E., 3,880,619.

Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., to Olinkraft, Inc. Bulk material container. 3,880,341, Cl. 229-23.00R.

Bando, Satoshi: *See*—
Hara, Kazuo; Bando, Satoshi; Yoshitake, Toshihiko; and Tasaka, Takeo, 3,880,950.

Bangor Punta Operations, Inc.: *See*—
Huck, William F., 3,880,272.

Bannister, Ramon A.: *See*—
Hess, Daniel N.; and Bannister, Ramon A., 3,880,585.

Bannister, William W.; Pennace, John R.; and Curby, William A. Method for thickening, igniting and projecting hydrocarbon fuels. 3,880,569, Cl. 431-4.000.

Barandon, Rene: *See*—
Sifre, Gaston; and Barandon, Rene, 3,880,681.

Barber, Albert John: *See*—
Massy, Derek James Rowland; Winterbottom, Kenneth; Barber, Albert John; and McCartney, James, 3,881,047.

Barbieri, Siegfried, to Durst AG Fabrik Fototechnischer Apparate. Process and apparatus for the prefiltering and for exposure interruption in enlarging apparatus. 3,880,519, Cl. 355-36.000.

Barker, Alan Ernest: *See*—
Harris, Frederick Charles; Ward, Barry; and Barker, Alan Ernest, 3,880,537.

Barker, Carl E.: *See*—
Lindroth, Herbert L.; and Barker, Carl E., 3,881,163.

Barnes, Virgil O.; and Johnson, George E. Adaptor for mounting operating power drive units on valves. 3,880,013, Cl. 74-89.150.

Barnich, Richard G., to Process Computer Systems, Inc. Peripheral interrupt apparatus for digital computer system. 3,881,174, Cl. 340-172.500.

Baron, George B., to Marion Power Shovel Company, Inc. Cushioned roller circle. 3,880,482, Cl. 308-219.000.

Barr & Murphy Limited: *See*—
Barr, Peter Joachim, 3,879,856.

Barr, Peter Joachim, to Barr & Murphy Limited. Method and apparatus for drying particulate materials. 3,879,856, Cl. 34-10.000.

Barr, Robert A.; and Reed, John W., to Hoover Ball and Bearing Company. Twin clamp unit for blow molding machine. 3,880,565, Cl. 425-150.000.

Barringer, Donald Frederic, Jr.: *See*—
Wright, Donald Perry, Jr.; Barringer, Donald Frederic, Jr.; and McKay, Donald Edward, 3,880,904.

Barry Wright Corporation: *See*—
Markowski, Edwin P.; and Pepi, Jerome S., 3,880,041.

Bartera, Ralph E., to California Institute of Technology. Multiple crystal oscillator measuring apparatus. 3,879,992, Cl. 73-30.000.

Bartlett, Peter G.; and Henry, Donald E., to Struthers-Dunn, Inc. Process control computer. 3,881,172, Cl. 340-172.500.

Bartling, Gerhard; and VonRonai-Horvath, Michael, to SKF Kugellagerfabriken GmbH. Method and apparatus for controlling the rejoining of thread in an open ended spinning machine. 3,879,926, Cl. 57-58.950.

Bartram, Derrick: *See*—
Bassendale, Derrick Arthur; and Bartram, Derrick, 3,879,917.

BASF Aktiengesellschaft: *See*—
Baer, Karl; Elliehausen, Heinrich; Hohenschutz, Heinz; Strohmeyer, Max; and Zirker, Guenter, 3,880,940.
Fabian, Wolfgang, 3,880,890.
Habermann, Wolfgang; Nohe, Heinz; and Jaeger, Peter, 3,880,728.
Scheidmeir, Walter; Bressel, Ulrich; and Hohenschutz, Heinz, 3,880,923.
Scheuermann, Horst; Mach, Wolfgang; and Augart, Dietmar, 3,880,869.

Bassendale, Derrick Arthur; and Bartram, Derrick, to FMC Corporation. Method and apparatus for packaging particulate material. 3,879,917, Cl. 53-28.000.

Bata Industries Limited: *See*—
Hujik, Ladislav, 3,880,562.

Battle Development Corporation, The: *See*—
Brenden, Byron B., 3,879,989.

Bauer, Adolf, to Thermovox GmbH. Arrangement for heating and cooling a double-walled mold. 3,880,227, Cl. 165-27.000.

Bauer, Kurt; and Hoff, Dieter, to Bayer Aktiengesellschaft. Oral ruminant compositions comprising a medicinal substance encapsulated or embedded in a basic polymer. 3,880,990, Cl. 424-19.000.

Baumann, Hans D. Rotary multiport throttling valve. 3,880,191, Cl. 137-625.320.

Baxter, Gene F.: *See*—
Freeman, Harlan G.; Baxter, Gene F.; and Grahm, George, 3,880,694.

Baxter Laboratories, Inc.: *See*—
Fly, Thomas W., 3,880,988.
Garcia, Luis A., 3,880,989.

Bayer Aktiengesellschaft: *See*—
Bauer, Kurt; and Hoff, Dieter, 3,880,990.
Boshagen, Horst; and Plempel, Manfred, 3,880,847.
Brost, Hans R., 3,880,754.
Bueb, Michael; Feltgen, Karlheinz; Muschelknautz, Edgar; and Rellensmann, Wolfgang, 3,879,927.
Frohberger, Paul-Ernst; and Botta, Arthur, 3,881,007.
Haeseler, Harke; Dorn, Ludwig; Moller, Wilhelm; Wokulat, Jorgen; Rubsam, Franz; and Heinze, Gerhard, 3,880,985.
Haupt, Heinrich; and Vernaleken, Hugh, 3,880,795.
Hoffmann, Hellmut; and Hammann, Ingeborg, 3,880,958.
Kishino, Shigeo; Yamada, Yasuo; Kudamtsu, Akio; Kurahashi, Yoshio; Sumi, Shoozo; Seki, Morisuke; and Shiokawa, Koozo, 3,880,959.
Oediger, Hermann; and Braden, Rudolf, 3,880,919.
Regel, Erik K.; Buchel, Karl-Heinz; and Plempel, Manfred, 3,881,014.
Schmidt, Karl-Julius; and Hammann, Ingeborg, 3,880,997.
Serini, Volker; Humme, Gert; Ott, Karl-Heinz; Cohnen, Wolfgang; and Vernaleken, Hugo, 3,880,783.
Sirrenberg, Wilhelm; and Homeyer, Bernhard, 3,880,960.
Wagner, Kuno; and Schroer, Walter, 3,880,784.
Widdig, Arno; Kuhle, Engelbert; Grewe, Ferdinand; Kaspers, Helmut; Scheinpflug, Hans; and Frohberger, Paul-Ernst, 3,881,018.
Winkler, Adolf, 3,880,917.

Baylor, John M., to J. I. Case Company. Crawler chain sprocket with relief openings. 3,880,478, Cl. 305-13.000.

BBC Brown Boveri & Company Limited: *See*—
Jenny, Ernst, 3,879,937.
Widmer, Hans, 3,881,080.
Zboril, Josef, 3,880,600.

Beard, Colin C., to Syntex (U.S.A.) Inc. 2-Substituted -1,2,4-thiadiazolo-(2,3-a)benzimidazoles and process for their preparation. 3,880,874, Cl. 260-306.80F.

Beatrice Foods Co.: *See*—
Hunter, Carl T., 3,880,288.

Beavers, Leo E.: *See*—
Lau, Philip T.; Salminen, Ilmari F.; and Beavers, Leo E., 3,880,661.

Beavon, David K., to Ralph M. Parsons Company, The. Process for the conversion of hydrogen sulfide in gas streams of low hydrogen sulfide concentration to sulfur. 3,880,986, Cl. 423-574.000.

Bechtloff, Gert; and Szonn, Reinhold, to Bechtloff, Gert. Cover belt conveyor. 3,880,274, Cl. 198-165.000.

Beck, Erich; Robbins, Albert L.; and Birdsall, John C., to Askco Engineering Corporation. Apparatus for producing plastic sheet or film stock. 3,880,564, Cl. 425-209.000.

Beck, James R., to Eli Lilly and Company. Sulfanilamide herbicides. 3,880,644, Cl. 71-88.000.

Becker, Arno, to Bruckner Trockentechnik KG. Apparatus for uncurling the edges of a fabric web. 3,879,817, Cl. 26-54.000.

Becker, Donald E., to Becker, Inc. Bowed tie rod with deformable cone means. 3,880,397, Cl. 249-214.000.

Becker, Frank E. Audible indexing for dictation apparatus. 3,881,072, Cl. 179-100.1DR.

Becker, Inc.: *See*—
Becker, Donald E., 3,880,397.
Becker, Robert W.: *See*—
Becker, Walter M.; and Becker, Robert W., 3,880,345.
Becker, Walter M.; and Becker, Robert W. Pneumatic drawer apparatus. 3,880,345, Cl. 232-44.000.
Beckman Instruments, Inc.: *See*—
Schott, Dan J., 3,881,131.
Beckman-Riic Limited: *See*—
Brunt, Alfred Edwin, 3,880,737.
Beecham Group Limited: *See*—
Hardy, Kenneth David; Nayler, John Herbert Charles; and Stove, Edward Raymond, 3,881,013.
Beeman, Robert H.; and Burns, Robert V., to GTE Automatic Electric Laboratories Incorporated. Totalizer circuit for coin operated telephones. 3,881,062, Cl. 179-6.30R.
Beers, Eugene W.: *See*—
Travis, Charles H.; Noller, Harry F.; and Beers, Eugene W., 3,880,270.
Beguin, Rene, to Test, Societe anonyme d'Etudes techniques. Leg type support with automatic adjustment. 3,880,388, Cl. 248-188.300.
Beiersdorf Aktiengesellschaft: *See*—
Guse, Gunter; and Pietsch, Hanns Georg, 3,880,813.
Belanger, Inc.: *See*—
Belanger, James A., 3,879,903.
Belanger, James A., to Belanger, Inc. Wheel or drum construction and packs therefor. 3,879,903, Cl. 51-337.000.
Belart, Juan; Fink, Werner; Kircher, Dieter; and Von Grunberg, Hubertus, to ITT Industries, Inc. Electromagnetic valve. 3,880,476, Cl. 303-21.00F.
Bell & Howell Company: *See*—
Schmidt, Josef, 3,880,534.
Bell-Northern Research Ltd.: *See*—
Willis, Wesley Nelson; and Laing, Graham Sterling, 3,881,071.
Bell Telephone Laboratories, Incorporated: *See*—
Connell, Joseph Bernard; and Zarouni, Alfred, 3,881,060.
Jones, Charles Elmer, Jr.; and MacPherson, William Frederick, 3,881,068.
Pantanelli, Georges Pierre, 3,880,971.
Schweizer, Paul Edward; Toepfer, Edwin Frank; and Warnock, Merville Lee, 3,879,968.
Tompsett, Michael Francis, 3,881,117.
Belmont, Edward A., to Lockheed Aircraft Corporation. Means and method for protecting and spacing clamped insulated wires. 3,880,490, Cl. 339-103.00B.
Beloit Corporation: *See*—
Matthew, John B., 3,880,368.
Beltzer, Morton, to Exxon Research and Engineering Company. Potentiometric CO detector. 3,880,722, Cl. 204-1.00T.
Benatti, Vincenzo: *See*—
Calori, Giovanni; and Benatti, Vincenzo, 3,880,688.
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Bendix Corporation, The: *See*—
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Twaddell, Russell William; and Watson, Edwin Ben, 3,880,131.
Bennett, Harold C. Irrigating apparatus. 3,880,189, Cl. 137-608.000.
Bennett, Robert Neil; Oswald, Brian James; and Thurlow, Terence Norman, to British Petroleum Company Limited, The. Production of lubricating oils. 3,880,746, Cl. 208-59.000.
Berger, Dieter: *See*—
Rittersdorf, Walter; Guthlein, Werner; Berger, Dieter; Rey, Hans-Georg; and Rieckmann, Peter, 3,880,588.
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Weisglass, Louis L., 3,880,520.
Berman, Robert A. Endotracheal tube. 3,880,168, Cl. 128-351.000.
Berry, Holland J.; Hardy, William C.; and Zadow, Dale W., to Sun Oil Company (Delaware). Method and apparatus for igniting well heaters. 3,880,235, Cl. 166-302.000.
Berry, Norman H. Spark plug boot. 3,881,051, Cl. 174-35.0SM.
Bertness, Theodore A.: *See*—
Snavely, Earl S., Jr.; and Bertness, Theodore A., 3,880,237.
Bertrand, Robert G., to Dow Corning Corporation. Metal coated with a lubricant composition. 3,881,048, Cl. 428-447.000.
Bertsch, Joseph F., to General Motors Corporation. Catalytic converter. 3,879,944, Cl. 60-299.000.
Besoyan, Kirk, to Auxiliary Brake Systems, Inc. Control means for auxiliary brake device. 3,880,262, Cl. 188-77.00R.
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Lange, K. Robert; and Hsu, Yuan Tsun, 3,880,620.
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Fuchs, Otto; Bier, Gerhard; and Trautvetter, Werner, 3,880,690.
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Bier, Kenneth C.: *See*—
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Biewer, Frank N., to Offshore Technology Corporation. Method and apparatus for offshore submersible oil storage and drilling. 3,880,102, Cl. 114-.50T.
Bigelow, Louis K., Jr., to Kennecott Copper Corporation. Eddy current flaw detector comprising passing the test piece through an invarient magnetic field gradient and positioning sensor in the gradient. 3,881,151, Cl. 324-37.000.
Bigham, Carroll R., to United States of America, Air Force. Fatigue resistant spanwise splice. 3,879,916, Cl. 52-758.00D.
Bigou, Jacques: *See*—
Ailett, Claude; Bigou, Jacques; and Bretecher, Yves, 3,881,099.
Bilhorn, John M., to ESB Incorporated. Process for making an electrode bearing plastic strip. 3,880,669, Cl. 136-10.000.
Bindrum, Irmgard: *See*—
Brandt, Wilhelm; and Bindrum, Irmgard, 3,881,049.
Bingham, Vernon R. Projectile and correspondingly shaped target including a projectile stop. 3,880,427, Cl. 273-95.00R.
Binns, Lloyd Sylvester. Blind rivet. 3,880,042, Cl. 85-72.000.
Biphase Engines, Inc.: *See*—
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Sarff, Forest M.; and Birch, Silas B., Jr., 3,880,204.
Birdsall, John C.: *See*—
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Bishop-Wisecarver Corporation: *See*—
Wisecarver, Warren R., 3,880,394.
Black, James A.; and Farwell, Harry Russell, to said James A. Black, by said Harry Russell Farwell. Web registration with web pull-back and skewing means. 3,880,076, Cl. 101-115.000.
Black, James Whyte; Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, to Smith Kline & French Laboratories Limited. Pharmaceutical compositions and methods of inhibiting histamine activity with isothiourea compounds. 3,881,015, Cl. 424-273.000.
Black, James Whyte; Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, to Smith Kline & French Laboratories Limited. Pharmaceutical compositions and methods of inhibiting histamine activity with carboxamidine compounds. 3,881,016, Cl. 424-273.000.
Bleh, Otto: *See*—
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Blick, Edward F., to Stein, Paul D., a part interest. Method and apparatus for continuously monitoring blood pressure. 3,880,145, Cl. 128-2.05A.
Block, Charles F.: *See*—
Kelly, Harold D.; Block, Charles F.; and McDonald, Thomas L., 3,881,004.
Blohm, Thomas R.: *See*—
Grisar, Johann Martin; and Blohm, Thomas R., 3,881,006.
Bloom, William M., to Allegheny Ludlum Industries, Inc. Method and apparatus for heating pieces of steel scrap. 3,880,649, Cl. 75-60.000.
Blumenaus, Jon M., to Raymond Lee Organization, Inc., The, a part interest. Game board, attachable game pieces and carrying case. 3,880,429, Cl. 273-136.00E.
Bobo, Frank E. Minnow scooper and holder. 3,879,879, Cl. 43-4.000.
Bockelman, Harry C. Shakerboard for bowling pinsetters. 3,880,424, Cl. 273-43.00R.
Bodanszky, Miklos, to E. R. Squibb & Sons, Inc. Amino acid derivatives. 3,880,838, Cl. 260-239.30B.
Bodner, John J.; Grubb, Everett F.; McCormack, Kenneth J.; and Moore, Ronald H., to Owens-Illinois, Inc. Sulfur recovery from glass melting and refining. 3,880,639, Cl. 65-134.000.
Boehringer Mannheim G.m.b.H.: *See*—
Kampe, Wolfgang; Fauland, Erich; Stach, Kurt; Stork, Harald; and Schmidt, Felix Helmut, 3,880,829.
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Klein, Leo A., 3,880,438.
Bogart, Peter D. Digital counters and odometers. 3,880,351, Cl. 235-95.00R.
Boggild, Robert; and Dale, William L., to Flexi-Dyne Incorporated. Gymnastic pole and process of making same. 3,880,422, Cl. 272-60.00R.

Bohn, Robert E.: *See—*
Bovett, Duane E.; and Bohn, Robert E., 3,880,075.

Bok, Hendrik F.; and St. Onge, Eugene, to In-Line Technology, Inc. Solution agitation apparatus. 3,880,409, Cl. 259-95.000.

Bolcskei, Erno: *See—*
Dinzburg, Boris Nisonovich; Smetkin, Jury Alexandrovich; Alexenko, Vladimir Iosifovich; Mikhailov, Vsevolod Andreevich; Lorant, Ivan, Dr.; Seltenreich, Gyozo; Keszei, Jeno; Marton, Gyorgy; Balazsfai, Albert; Donath, Jeno; and Bolcskei, Erno, 3,880,970.

Boltinghouse, Joseph C.; and Gross, Alfred G., Jr., to Rockwell International Corporation. Method of producing a mass unbalanced spherical gyroscope rotor. 3,880,606, Cl. 29-417.000.

Bombicino, Thomas A.: *See—*
Towne, Allen N.; and Bombicino, Thomas A., 3,880,972.

Bompart, Reuben N. Sign holder (four leg type). 3,880,395, Cl. 248-464.000.

Bonaddio, Robert M.; and Parkhill, Laverne O., to PPG Industries, Inc. Method for ganged scoring of glass. 3,880,029, Cl. 83-7.000.

Bondi, Herman H., to Portland Memorial Inc. Vertical positioning device. 3,879,852, Cl. 33-180.00R.

Bondley, Ralph J., to United States of America, Atomic Energy Commission. Low temperature metallization of ferrite. 3,881,038, Cl. 427-156.000.

Bone, Arnold R., to Dennison Manufacturing Company. Fastener dispensing apparatus. 3,880,339, Cl. 227-8.000.

Booher, Harold R., to Goodyear Tire & Rubber Company, The. Anti-skid system. 3,880,475, Cl. 303-21.0BE.

Boom, Clarence O.; and Hanson, Laurence B., to Gardner-Denver Company. Telescopic rock drill feed. 3,880,244, Cl. 173-19.000.

Booth, Frederick C., to Allied Chemical Corporation. Retractor with switch. 3,880,379, Cl. 242-107.400.

Boots, Wendell K.; Buescher, William E.; and Kerstetter, Donald R., to GTE Sylvania Incorporated. Fast warm-up cathode assembly. 3,881,126, Cl. 313-337.000.

Bor-, Cipo-, Szormeipari Kutato Intezet, Parsi Jozsef: *See—*
Dinzburg, Boris Nisonovich; Smetkin, Jury Alexandrovich; Alexenko, Vladimir Iosifovich; Mikhailov, Vsevolod Andreevich; Lorant, Ivan, Dr.; Seltenreich, Gyozo; Keszei, Jeno; Marton, Gyorgy; Balazsfai, Albert; Donath, Jeno; and Bolcskei, Erno, 3,880,970.

Borg-Warner Corporation: *See—*
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Borgianni, Carlo: *See—*
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Bory, Michael, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Apparatus for regulating the position of a laser light source transmitting a light beam. 3,881,107, Cl. 250-234.000.

Boshagen, Horst; and Plempel, Manfred, to Bayer Aktiengesellschaft. Thiocarbamic acid derivatives. 3,880,847, Cl. 260-243.00R.

Boss, Gary R., to Erie Manufacturing Company. Timed fluid valve. 3,880,190, Cl. 137-624.120.

Bothwell, Peter William. Head and chest protectors, for example for motor cyclists. 3,879,761, Cl. 2-3.00R.

Botta, Arthur: *See—*
Frohberger, Paul-Ernst; and Botta, Arthur, 3,881,007.

Bovett, Duane E.; and Bohn, Robert E., to Burroughs Corporation. Automatic chain identification method and apparatus. 3,880,075, Cl. 101-111.000.

Box, E. O., Jr.; and Uhrick, David A., to Phillips Petroleum Company. Highly calcined support for catalytic dehydrogenation. 3,880,776, Cl. 252-466.0PT.

Bozzato, Giuliano; Pesaro, Mario; Schudel, Peter; Hug-Inderbitzin, Marianne; and Erickson, Robert Edward, to Givaudan Corporation. Novel norеremophilane derivatives. 3,880,931, Cl. 260-586.00F.

Brackman, Derek Samuel, to Imperial Chemical Industries Limited. Photodegradable polyethylene composition containing poly(4-methylpentene) and a photosensitizer. 3,880,952, Cl. 260-878.00R.

Braden, Rudolf: *See—*
Oediger, Hermann; and Braden, Rudolf, 3,880,919.

Bradley, Richard S., to Weigh-Tronix, Inc. Deformation responsive weighing apparatus. 3,879,998, Cl. 73-141.00A.

Braginetz, Paul A., to Philip Morris Incorporated. Spring clips for razor blade cartridge magazines. 3,880,321, Cl. 221-66.000.

Brajenovich, Steve, to General Tire and Rubber Company, The. Asymmetrical construction tire. 3,880,218, Cl. 152-209.00R.

Brajer, Victor; Grossman, Walter B.; and Hosek, William S., to Thiokol Chemical Corporation. Apparatus for positive feeding of fluid propellants. 3,880,327, Cl. 222-95.000.

Brandenburg, Heinrich: *See—*
Dorn, Wolfgang; Brandenburg, Heinrich; and Schoffl, Rainer, 3,879,942.

Brandt, Wilhelm; and Bindrum, Irmgard, to Kalle Aktiengesellschaft. Process for depositing copper layers on shaped articles of a polyimide. 3,881,049, Cl. 428-458.000.

Braslaw, Jacob: *See—*
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Braswell, William Dorne: *See—*
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Braun Aktiengesellschaft: *See—*
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Breco Kunststoffverarbeitungs GmbH & Co. KG: *See—*
Breher, Rudolf; and Kohlmeier, Herbert, 3,880,558.

Breher, Rudolf; and Kohlmeier, Herbert, to Breco Kunststoffverarbeitungs GmbH & Co. KG. Device for producing in a continuous manner reinforced profile belts from extruded material. 3,880,558, Cl. 425-115.000.

Brenden, Byron B., to Battle Development Corporation, The. Ultrasonic holography. 3,879,989, Cl. 73-67.50H.

Brennan, Edward J., to Universal Oil Products Company. Forward-folding arm rest for vehicular seating. 3,880,466, Cl. 297-417.000.

Breslow, David S., to Hercules Incorporated. Polyfunctional quaternary amidoximidinum salts. 3,880,865, Cl. 260-286.00Q.

Bressel, Ulrich: *See—*
Scheidmeir, Walter; Bressel, Ulrich; and Hohenschutz, Heinz, 3,880,923.

Bretecher, Yves: *See—*
Ailett, Claude; Bigou, Jacques; and Bretecher, Yves, 3,881,099.

Breuer, Hermann; and Treuner, Uwe D., to E. R. Squibb & Sons, Inc. Vinylaminoacetyl cephalosporins. 3,880,846, Cl. 260-243.00C.

Breuer, Hermann, to E. R. Squibb & Sons, Inc. Indanol diesters with thiocarbonic acid. 3,880,902, Cl. 260-455.00B.

Bridges, Alvin C. Means to adjust wheel support pivot shaft. 3,880,444, Cl. 280-96.20B.

Brink, Robert H., Jr.: *See—*
Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, 3,881,008.

Bristol-Myers Company: *See—*
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Kawaguchi, Hiroshi; Tsukiura, Hiroshi; Fujisawa, Kei-ichi; and Numata, Kei-ichi, 3,880,994.

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Nau, Bernard S., 3,880,433.

British Petroleum Company Limited, The: *See—*
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Bennett, Robert Neil; Oswald, Brian James; and Thurlow, Terence Norman, 3,880,746.

British Ropes Ltd.: *See—*
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British Secretary of State for Defence: *See—*
Jones, Gordon Robert; Shaw, Norman; and Vere, Anthony Worswick, 3,881,109.

Brittain, Darryl A.: *See—*
Anderson, Paul L.; and Brittain, Darryl A., 3,880,932.

Britz, Helmut; Maltz, Georg; Niemann, Gert; and Verdenhalven, Gerd, to Kable-und Metallwerke Gutehoffnungshutte AG. Cable for transmission of PCM signals with plural independent signal paths. 3,881,052, Cl. 174-103.000.

Brock, George W.; Shelledy, Frank B.; Smith, Sidney H.; and Wills, Arthur B., to International Business Machines Corporation. Shielded magnetoresistive magnetic transducer and method of manufacture thereof. 3,881,190, Cl. 360-113.000.

Brockmuller, Friedrich Franz, to Windmoller & Holscher. Apparatus for piling flat workpieces. 3,880,059, Cl. 93-93.0DP.

Broline, Eric Nicholas, to Columbia Scientific Industries Corporation. Electronic multi-media programmer. 3,881,185, Cl. 360-80.000.

Bromley, Thomas D., to Dover Corporation. Welding apparatus. 3,881,083, Cl. 219-84.000.

Bronshtein, Isaae Iosifovich: *See—*
Merzhanian, Artemy Arutjunovich; Brusilovsky, Sergei Alexeevich; Sarishvili, Naskid Grigorievich; Kishkovsky, Zbignev Nikolaevich; Bronshtein, Isaae Iosifovich; and Gagarin, Mikhail Alexeevich, 3,881,021.

Brook, David E.: *See—*
Yolles, Seymour, 3,880,991.

Brookson, Robert H., Jr.; and Greig, Richard G., to Teton Toy Development Company. Inflatable top. 3,879,887, Cl. 46-67.000.

Brost, Hans R., to Bayer Aktiengesellschaft. Filtering with polyacrylonitrile or polyamide fibers as filter aid. 3,880,754, Cl. 210-75.000.

Broussard, Spergan J., Sr. Picture mounting and display system. 3,879,874, Cl. 40-158.000.

Brown, Delmont D., to D. S. Brown Company, The. Expansion joint and seal. 3,880,539, Cl. 404-48.000.

Brown, Delmont D.: *See—*
Rizza, Michael C.; and Brown, Delmont D., 3,880,540.

Brown, Edward S.; Henson, Rudy D.; Farris, James D.; and Feola, John A., to General Tire and Rubber Company, The. Corrective heating of pneumatic tires. 3,880,556, Cl. 425-11.000.

Brown, Frank E. Carrying case and cartridge for contact lenses. 3,880,278, Cl. 206-5.100.

Brown, Melancthon S., to Chevron Research Company. O,O-dialkyl-β-phenylthiovinyl phosphates used as mollusicides. 3,881,001, Cl. 424-216.000.

Brown, Merle S.: *See—*
Gardner, John A., Jr.; and Brown, Merle S., 3,880,329.

Brown, William H. Galvanizing continuous elements with prevention of corrosion of the pan. 3,881,036, Cl. 427-49.000.

Brown & Williamson Tobacco Corporation: *See—*
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Brozena, Edward John: *See—*
Seeber, Howard Arthur; Marchisen, Joseph; and Brozena, Edward John, 3,880,092.

Bruckner Trockentechnik KG: *See—*
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Brueske, Ralph H., to Butler Manufacturing Company. Portable, personnel guard rail. 3,880,405, Cl. 256-59.000.

Brumlik, George C. Method of making multi element self-gripping device having cooperating gripping elements. 3,879,835, Cl. 29-412.000.

Brummer, Dietmar; Maier, Hans; Schwedhelm, Werner; Steegmuller, Helmut; and Donauer, Manfred, to Robert Bosch G.m.b.H. Windshield wiper for automotive vehicles. 3,879,792, Cl. 15-250.420.

Brunt, Alfred Edwin, to Beckman-Riic Limited. Combination electrode. 3,880,737, Cl. 204-195.00G.

Brusilovsky, Sergei Alexeevich: *See*—
Merzhanian, Artemy Arutjunovich; Brusilovsky, Sergei Alexeevich; Sarishvili, Naskid Grigorievich; Kishkovsky, Zbignev Nikolaevich; Bronshtein, Isaae Iosifovich; and Gagarin, Mikhail Alexeevich, 3,881,021.

Bruyere, Jean Claude: *See*—
Valin, Jean; and Bruyere, Jean Claude, 3,880,602.

Bryant, Frank Allan, to Offshore Company, The. Drilling vessel and drilling vessel mooring system and method. 3,880,105, Cl. 114-206.00R.

Bryngdahl, Olof, to Xerox Corporation. Method of storing optical information on a random carrier. 3,880,497, Cl. 350-162.0SF.

Bucalo, Louis, to Bucalo, Louis; and Investors In Ventures, Inc. Two-piece implants. 3,880,137, Cl. 128-1.00R.

Buchel, Karl-Heinz: *See*—
Regel, Erik K.; Buchel, Karl-Heinz; and Plempel, Manfred, 3,881,014.

Bucil, Frantisek; Vasek, Vitezslav; and Spatenka, Karel, to Vyzkumny ustav bavlnarsky. Method of and apparatus for controlling weft carriers in travelling-shed weaving machines. 3,880,197, Cl. 139-12.000.

Buck, Ollie G.: *See*—
Hsieh, Henry L.; and Buck, Ollie G., 3,880,955.

Budzyna, Joseph M., to Rockwell International Corporation. Safety lock for looms. 3,880,196, Cl. 139-1.00R.

Bueb, Michael; Feltgen, Karlheinz; Muschelknautz, Edgar; and Rellensmann, Wolfgang, to Bayer Aktiengesellschaft. False twisting device. 3,879,927, Cl. 57-77.400.

Buehrle, Russell L.: *See*—
Roesel, Thomas L.; and Buehrle, Russell L., 3,880,324.

Buescher, William E., to GTE Sylvania Corporation. Cathode for electron discharge device having highly adherent emissive coating of nickel and nickel coated carbonates. 3,879,830, Cl. 29-182.300.

Buescher, William E.; and Kerstetter, Donald R., to GTE Sylvania Incorporated. Fast warm-up picture tube cathode system. 3,881,124, Cl. 313-37.000.

Buescher, William E.: *See*—
Boots, Wendell K.; Buescher, William E.; and Kerstetter, Donald R., 3,881,126.

Buhrer, Carl F., to GTE Laboratories Incorporated. Adapter for high voltage electrochemical cell. 3,880,673, Cl. 136-173.000.

Bunker Ramo Corporation: *See*—
Johnston, Samuel Andrew, 3,880,009.

Bunts, Harold A., to Goodyear Tire & Rubber Company, The. Tire Bead Loosening Tool. 3,880,220, Cl. 157-1.170.

Burge, Harland L., Jr.: *See*—
Koppang, Richard R.; Burge, Harland L., Jr.; Carter, Wallace A.; and Sheffield, Ellis W., 3,880,571.

Burke, James J., Jr.: *See*—
Coffey, Ronald B.; and Burke, James J., Jr., 3,880,432.

Burki, Hugues, to Societe Suisse pour l'Industrie Horlogere Management Services SA. Clockwork movement comprising a gear-train with a friction clutch therein. 3,879,930, Cl. 58-7.000.

Burlington Industries, Inc.: *See*—
Luckenbach, Roy; and Funk, John, 3,880,583.

Burns, Richard D., to General Electric Company. Method and apparatus for monitoring and controlling ambulant strip materials, especially suitable for use in the manufacture of insulators for inductive devices. 3,880,000, Cl. 73-159.000.

Burns, Robert V.: *See*—
Beeman, Robert H.; and Burns, Robert V., 3,881,062.

Burris Company: *See*—
Burris, Donald J., 3,880,389.

Burris, Donald J., to Burris Company. Riflescope mount. 3,880,389, Cl. 248-205.00R.

Burris, Lenard A.; and Burris, Theodore L. Surgical appliance. 3,880,417, Cl. 269-328.000.

Burris, Theodore L.: *See*—
Burris, Lenard A.; and Burris, Theodore L., 3,880,417.

Burroughs Corporation: *See*—
Bovett, Duane E.; and Bohn, Robert E., 3,880,075.
Lockhart, James Albert, Jr., 3,880,493.

Burroughs, James E., to Borg-Warner Corporation. Mouthpiece for breath testing devices. 3,880,591, Cl. 23-259.000.

Burt, Glenn R.; and Odsather, Richard L. Embankment on muskeg and associated methods. 3,880,538, Cl. 404-28.000.

Bury, George John: *See*—
Durham, Walter Thomas; Bury, George John; and Swick, Edwin Grant, 3,880,535.

Burzen, Norman J., to I.M.M. Ventures Limited. Apparatus for totalizing coins. 3,880,268, Cl. 194-9.00R.

Busch, Peter: *See*—
Story, Paul Richard; Lee, Bunge; and Busch, Peter, 3,880,882.

Bush, Walter Monroe: *See*—
Lestina, Gregory James; and Bush, Walter Monroe, 3,880,658.

Butler, Gordon C.: *See*—
Roth, Charles F.; and Butler, Gordon C., 3,879,785.

Butler Manufacturing Company: *See*—
Brueske, Ralph H., 3,880,405.

Butler, Richard L.; and Juvinall, John W., to Owens-Illinois, Inc. Sealing surface gauge. 3,880,750, Cl. 209-111.700.

Butterfield, John Leonard; and Wenzel, James Lawrence, to General Electric Company. Fluid level sight gage for dynamoelectric machine mounted within the machine frame. 3,880,005, Cl. 73-334.000.

Buttner, Hans Hugo, to Buttner Kommanditgesellschaft Maschinenfabrik, Firma. Machine for the tying of packages. 3,880,071, Cl. 100-27.000.

Buttner Kommanditgesellschaft Maschinenfabrik, Firma: *See*—
Buttner, Hans Hugo, 3,880,071.

Byrne, John J.; and Gruger, Robert W., to Gulf & Western Manufacturing Company. Aircraft retarding system. 3,880,386, Cl. 244-110.00A.

C. Evans & Sons Limited: *See*—
Gostling, Peter Eric, 3,880,533.

Caddock, Richard E. Method and apparatus for manufacturing cylindrical resistors by thick-film silk-screening. 3,880,609, Cl. 29-620.000.

Caddock, Richard E. Film-type cylindrical resistor and method of manufacturing. 3,881,162, Cl. 338-61.000.

Caldwell, Edward N., to Robertshaw Controls Company. Heat exchange system and method and control device therefor. 3,880,229, Cl. 165-40.000.

Caldwell, John C., Jr.: *See*—
Showalter, William E.; Huffman, Joseph G.; and Caldwell, John C., Jr., 3,880,234.

California Institute of Technology: *See*—
Bartera, Ralph E., 3,879,992.
Miller, Charles G., 3,881,132.
Stephens, James B.; Mahadevan, Parameswar; and Chuan, Raymond L., 3,881,111.

Calkins, John A.: *See*—
Mueller, Robert J.; Jesme, Philip O., Jr.; and Calkins, John A., 3,880,113.

Callahan, Marion L.: *See*—
Apostoleris, Theodore G.; and Callahan, Marion L., 3,880,978.

Calori, Giovanni; and Benatti, Vincenzo, to Industrie Pirelli S.p.A. Method and apparatus for the continuous production of ring-shaped pieces of reinforced rubber. 3,880,688, Cl. 156-190.000.

Camilleri, Charles F., to Gusdorf & Sons, Inc. Structural member for furniture. 3,880,097, Cl. 108-150.000.

Campbell, Jack B. Selective dehalogenation. 3,880,854, Cl. 260-251.00R.

Campbell Soup Company: *See*—
Ramsay, Joseph D., 3,880,749.

Canadian Patents and Development Limited: *See*—
Chen, Lawrence C. M.; Craigie, James S.; McCandless, Esther L.; McLachlan, Jack L.; Neish, Arthur C., deceased; Shacklock, Peter F.; and Walter, John A., 3,879,890.

Canal, Jose Roberto, to Rucker Company, The. Ram block. 3,880,436, Cl. 277-126.000.

Candor, James T.: *See*—
Candor, Robert R.; and Candor, James T., 3,879,858.

Candor, Robert R.; and Candor, James T. Method and apparatus for treating porous material with fluid. 3,879,858, Cl. 34-16.000.

Cann, Lyle L., to Chemetron Corporation. Method of chilling products. 3,879,954, Cl. 62-63.000.

Canon Kabushiki Kaisha: *See*—
Nagashima, Shinichiro; Tsuchiya, Kaichi; Sakamoto, Yoshihiro; Yamakami, Hiroshi; and Tomari, Seiji, 3,880,656.
Tanaka, Hiroshi; and Soma, Ikuo, 3,880,515.

Capossela, Anthony C., Jr.; Halligan, John F.; and Makaron, Leslie S., to General Foods Corporation. Partially gelatinizing potato pieces by a microwave heat treatment prior to deep fat frying. 3,881,028, Cl. 426-242.000.

Caraway, Guy C. Adjustable speed projector with synchronized sound recorder. 3,880,506, Cl. 352-194.000.

Carbonneau, Guy P., to Triformation Systems, Inc. Braille communication terminal. 3,880,269, Cl. 197-6.100.

Carl G. Peterson Co., Inc.: *See*—
St. Sauveur, Omer G., 3,880,375.

Carl Krasny & Associates, Inc.: *See*—
Kaplan, Irving Leonard, 3,880,070.

Carlisle, Henry W. Electric motor with parallel spaced axes. 3,881,122, Cl. 310-115.000.

Carlson, Elmer A., to International Telephone and Telegraph Corporation. Light sensitive zero voltage switch. 3,881,119, Cl. 307-252.00T.

Carrier Corporation: *See*—
Herb, Carl C., 3,880,060.
Raineri, Carlo J.; Mandy, Zoltan P.; Lesczynski, Michael; Styron, James S.; and Akerhielm, George, 3,880,756.

Carson, Bradley A.: *See*—
Rolker, John H.; and Carson, Bradley A., 3,880,689.

Carter, Wallace A.: *See*—
Koppang, Richard R.; Burge, Harland L., Jr.; Carter, Wallace A.; and Sheffield, Ellis W., 3,880,571.

Casale, Roberto. Button, particularly suitable for pillows and mattresses. 3,879,807, Cl. 24-102.00T.

Casella, Daniel C.: *See*—
Haugsjaa, Paul O.; and Casella, Daniel C., 3,880,572.

Cashin Systems Corporation: *See*—
Divan, William J., 3,880,035.

Catalano, Frank R., Sr. Precast foundation assembly for mobile homes. 3,879,905, Cl. 52-23.000.

Caton, Michael Peter Lear; Coffee, Edward Charles John; and Watkins, Gordon Leonard, to May & Baker Limited. 2-(Hydroxyalkyl)-cyclopentane carbaldehydes. 3,880,883, Cl. 260-340.900.

Cauffiel, Ford B. Tapered pole and method and apparatus for producing same. 3,879,977, Cl. 72-137.000.

Caveney, Robert John, to De Beers Industrial Diamond Division Limited. Metal-coated diamonds in a metal alloy matrix. 3,879,901, Cl. 51-295.000.

Celanese Corporation: *See—*
Zimmerman, Daniel; Schulze, Stephen; and Wolfowitz, Stanley, 3,880,966.

Center for Communications Research, Inc.: *See—*
Stewart, Leslie C., 3,881,059.

Central Specialties Co.: *See—*
Ballenger, William G., 3,880,378.

Centre National de la Recherche Scientifique: *See—*
Valin, Jean; and Bruyere, Jean Claude, 3,880,602.

Cernocky, Jiri: *See—*
Riha, Petr; Kovar, Stanislav; and Cernocky, Jiri, 3,880,199.

Chabal, Joseph: *See—*
Rieser, Raymond G.; and Chabal, Joseph, 3,881,043.

Champel, Gerard; and Ody, Francois, to Etablissements Joseph Lagarde. Apparatus for vapor treating textile material. 3,879,965, Cl. 68-5.00C.

Chandler, Estal D. Portable pressurized paint gun. 3,880,356, Cl. 239-308.000.

Chang, Roger; and Dobbins, John P., to Rockwell International. Nematic liquid-crystal compositions. 3,880,767, Cl. 252-299.000.

Chang, Yun-Feng: *See—*
Labana, Santokh S.; and Chang, Yun-Feng, 3,880,946.
Labana, Santokh S.; and Chang, Yun-Feng, 3,880,947.

Chapman, Charles Brian; and Haldon, Robert Anthony, to Imperial Chemical Industries Limited. Asymmetric membranous articles and methods for their manufacture. 3,880,763, Cl. 210-490.000.

Chapman, John Frederick; Cundall, John Henry; Gentles, Robert Paul; Johnson, Philip Cowey; and Stephenson, Kenneth, to Imperial Chemical Industries Limited. Process for production of cellular or foamed polyurethane from polyethers with and without catalyst. 3,880,781, Cl. 260-2.5AC.

Charbonney, Adrien Maurice, deceased; Therens, Jean-Jacques, legal representative; and Giger, Urs, to Eta A.G. Ebauches-Fabrik. Digital-display watch movement. 3,879,929, Cl. 58-5.000.

Chartet, Andre. Heating equipment for brazing aluminum radiator cores. 3,880,578, Cl. 432-243.000.

Chase-Shawmut Company, The: *See—*
Kozacka, Frederick J., 3,881,161.

Chatfield, Peter A., to Xerox Corporation. Floating developer platen for reproduction apparatus. 3,880,518, Cl. 355-16.000.

Chatourel, Pierre R.; and Lingrand, Michel A., to Regie Nationale des Usines Renault. Low-pressure casting devices. 3,880,222, Cl. 164-119.000.

Chemetron Corporation: *See—*
Cann, Lyle L., 3,879,954.
Van Horn, Charles A., 3,880,354.

Chemische Werke Huls Aktiengesellschaft: *See—*
Hellemanns, Gerhard; Rohl, Hermann; Hegenberg, Peter; and Eversmann, Werner, 3,880,921.

Chen, Heng Taan, to Vetrovec, Jan, a part interest. Machine for the manufacture of tape by a winding method. 3,880,696, Cl. 156-428.000.

Chen, Lawrence C. M.; Craigie, James S.; McCandless, Esther L.; McLachlan, Jack L.; Neish, Arthur C., deceased (by Neish, Dorothy A., executrix); Shacklock, Peter F.; and Walter, John A., to Canadian Patents and Development Limited. Algal polysaccharide production. 3,879,890, Cl. 47-1.400.

Chenot, Charles F., to GTE Sylvania Incorporated. Method of making improved magnesium aluminum gallate phosphors. 3,880,770, Cl. 252-301.40R.

Chernoff, Paul, to United States of America, Army. Electrically-controlled triggering circuit for fuzes and the like. 3,880,082, Cl. 102-70.20R.

Chevron Research Company: *See—*
Brown, Melancthon S., 3,881,001.
Guenther, Lloyd M., 3,879,819.
House, Ralph, 3,880,778.

Chicago Pneumatic Tool Company: *See—*
Amtsberg, Lester A.; and Wallace, William K., 3,880,023.
Anderson, Carl G., Jr., 3,880,245.

Chieger, George, to Fruehauf Corporation. Integral trailer suspension crossmember support - air reservoir structure. 3,880,445, Cl. 280-106.00R.

Childs, George William, deceased: *See—*
O'Neal, Cothburn M.; Mayo, Alfred M.; Childs, George William, deceased; and Childs, Patricia M., executrix, 3,881,092.

Childs, Patricia M., executrix: *See—*
O'Neal, Cothburn M.; Mayo, Alfred M.; Childs, George William, deceased; and Childs, Patricia M., executrix, 3,881,092.

Chin, Chang Kon. Miniature planetarium. 3,879,862, Cl. 35-45.000.

Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, to Hoffman-La Roche Inc. Alkynyloxy-phenyl derivatives. 3,880,935, Cl. 260-613.00D.

Chollet, Pierre: *See—*
Gervais, Edouard; and Chollet, Pierre, 3,880,679.

Chompff, Alfred J., to Ford Motor Company. Rubber reinforced polyamides. 3,880,948, Cl. 260-835.000.

Christensen, Burnett J.: *See—*
Gurries, Raymond A.; and Christensen, Burnett J., 3,880,243.

Christenson, Roger M.; Sullivan, Thomas R.; Das, Suryya K.; and Dowbenko, Rostyslaw, to PPG Industries, Inc. Method of making a non-aqueous acrylic coating composition. 3,880,796, Cl. 260-33.6UA.

Christiano, Victor: *See—*
Van Raalte, John A.; and Christiano, Victor, 3,880,725.

Chuan, Raymond L.: *See—*
Stephens, James B.; Mahadevan, Parameswar; and Chuan, Raymond L., 3,881,111.

Chugai Denki Kogyo Kabushiki-Kaisha: *See—*
Shibata, Akira, 3,880,777.

Chupp, John P., to Monsanto Company. Insecticidal O-phenyl S-aryl alkylphosphonodithioates. 3,881,002, Cl. 424-222.000.

Ciba-Geigy AG: *See—*
Kaspar, Jan; Kieffer, Edouard; and Rosch, Michael, 3,880,968.
Massy, Derek James Rowland; Winterbottom, Kenneth; Barber, Albert John; and McCartney, James, 3,881,047.

Ciba-Geigy Corporation: *See—*
Dickel, Daniel Frederick; and De Stevens, George, 3,880,916.
Scartazzini, Riccardo; Bickel, Hans; Heusler, Karl; and Woodward, Robert Burns, 3,880,833.
Spivack, John D.; and Luzzi, John J., 3,880,910.
Vlattas, Isidoros, 3,881,017.

Citzen Watch Co., Ltd.: *See—*
Yasuda, Tetuya; Suda, Haruo; and Kasama, Noriyuki, 3,879,931.

Cizeron, Jean. Double-barrelled firearms. 3,879,877, Cl. 42-42.00R.

Clairol Incorporated: *See—*
Fleischhauer, Eugene T., 3,881,086.

Clampett, John William, to Ford Motor Company. Flexible coupling. 3,879,959, Cl. 64-14.000.

Clark, Burton Parker, to General Electric Company. Gun bolt. 3,880,045, Cl. 89-9.000.

Clark Equipment Company: *See—*
DeRoshia, Garland D., 3,880,456.

Clark, James Freeman. Device for underwater observation. 3,879,953, Cl. 61-63.000.

Clark, John P.; Malcik, Frank J.; and Michaelis, Jack H., to Swingline, Inc. Expandable, large capacity, computer printout storage rack with work surface. 3,880,095, Cl. 108-114.000.

Clark, Larry G. Portable window-service counter unit and method. 3,879,913, Cl. 52-741.000.

Clem, Dennis W., to Goodyear Tire & Rubber Company, The. Making blades for tire curing molds. 3,880,020, Cl. 76-104.000.

Clements, Michael R.: *See—*
Larsen, Dee E.; and Clements, Michael R., 3,881,173.

Clevanger, James T., Jr.; and Snyder, Gary C., to Sperry Rand Corporation. Steering lock for a vehicle. 3,880,251, Cl. 180-77.00H.

Clinch, Colin W. F., to ITW Limited. Hooks. 3,879,812, Cl. 24-230.5TP.

Closmann, Philip Joseph: *See—*
Tham, Min Jack; and Closmann, Philip Joseph, 3,880,238.

Cluett Peabody & Co., Inc.: *See—*
Joy, Herman J., 3,879,990.

CMI Corporation: *See—*
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Coats & Clark, Inc.: *See—*
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Cobel, George B.: *See—*
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Coffee, Edward Charles John: *See—*
Caton, Michael Peter Lear; Coffee, Edward Charles John; and Watkins, Gordon Leonard, 3,880,883.

Coffey, Ronald B.; and Burke, James J., Jr., to Monsanto Company. Synthetic golf tee. 3,880,432, Cl. 273-195.00A.

Coffin, Harry S., to Control Data Corporation. Printed circuit card component removal method. 3,879,836, Cl. 29-427.000.

Cohen, Marvin: *See—*
von Strandtmann, Maximilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin, 3,880,861.

Cohnen, Wolfgang: *See—*
Serini, Volker; Humme, Gert; Ott, Karl-Heinz; Cohnen, Wolfgang; and Vernaleken, Hugo, 3,880,783.

Colburn, John W., Jr.: *See—*
Melton, Rosser B., Jr.; Colburn, John W., Jr.; and Wood, Charles D., III, 3,880,568.

Cole, Ann Mary; Turner, John Angus William; and Snell, Brian Kenneth, to Imperial Chemical Industries Limited. Pyrimidine sulphamates. 3,880,852, Cl. 260-247.10M.

Cole, George S.; Ritzenthaler, Richard L.; and Arnold, Don C. Diaphragm valve cartridge. 3,880,400, Cl. 251-155.000.

Coleman, Wells: *See—*
Auble, Ronald E.; and Coleman, Wells, 3,880,267.

Colgate-Palmolive Company: *See—*
Rockefeller, Winston G., 3,880,343.

Collier, John Covell; and Rickards, David William, to AMP Incorporated. Electrical connector to connect to flat flexible cable. 3,880,488, Cl. 339-97.00C.

Collin, Gerd: *See—*
Ramm, Klaus; Thielecke, Wilfried; Zander, Maximilian; Collin, Gerd; and Ruhl, Karl, 3,880,930.

Colt Industries Operating Corporation: *See—*
Bier, Kenneth C.; and Rhodes, Jerry P., 3,880,963.
Rhodes, Jerry P.; and Bier, Kenneth C., 3,880,962.

Columbia Scientific Industries Corporation: *See—*
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Andre, Marcel; Legrand, Bernard; and Montigaud, Jean-Marie, 3,881,093.
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Compagnie Internationale pour l'Informatique: *See—*
Valin, Jean; and Bruyere, Jean Claude, 3,880,602.
Conco Inc.: *See—*
Watson, Robert W., 3,880,393.
Connell, Joseph Bernard; and Zarouni, Alfred, to Bell Telephone Laboratories, Incorporated. Emergency reporting system. 3,881,060, Cl. 179-5.500.
Considine, Kevin T.: *See—*
Baker, Thompson A.; Balsiger, Melvin M.; Considine, Kevin T.; and Litsjo, Herbert E., 3,881,125.
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Cook, Gerald H., to Polaroid Corporation. Film reel with a cordal connection slot. 3,880,373, Cl. 242-56.00R.
Cook, Melvin A., to Ireco Chemicals. Booster for explosive blasting agents. 3,880,080, Cl. 102-24.00R.
Cooke, Anson Richard; and Starke, George Robert, to Amchem Products, Inc. Method for inhibiting the growth of tobacco suckers. 3,880,643, Cl. 71-78.000.
Cooper, Lawrence C.: *See—*
Maxfield, E. Blair; and Cooper, Lawrence C., 3,879,896.
Cooper, Robert Lynn, to International Telephone and Telegraph Corporation. Fuse extractor for use with fuse links having a flexible lead extending therefrom. 3,879,833, Cl. 29-203.00R.
Corey, Arthur F.; and Snyder, Bruce E., to United States of America, Air Force. Outer seal for first stage turbine. 3,880,550, Cl. 415-174.000.
Corkum, James L., to Alden Self-Transit Systems Corporation. Power system. 3,880,264, Cl. 191-49.000.
Corn, John E.; Webb, Jimmy L.; and Swiger, R. Thomas, to General Electric Company. Continuous process for the production of a diol from a diol ester. 3,880,939, Cl. 260-635.00R.
Corning Glass Works: *See—*
Ripley, Donald M., 3,880,631.
Walker, Edward S.; and Douglas, George A., 3,879,919.
Costain, Winston; and Terry, Bernard William Hugh, to Imperial Chemical Industries Limited. Preparations of benzoquinone and derivatives thereof. 3,880,893, Cl. 260-396.00R.
Coster Technolgie Speciali S.p.A.: *See—*
Giuffredi, Giancarlo, 3,880,207.
Coulter Electronics Inc.: *See—*
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Kuehnle, Manfred R., 3,880,514.
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Courduvelis, Constantine I.: *See—*
Daskalon, Leonard G.; Courduvelis, Constantine I.; and Koukos, Theodore, 3,880,662.
Couris, Alexander. Scaffolding with improved elevator mechanism. 3,880,256, Cl. 182-136.000.
Coursin, David B.; and Marmarou, Anthony. Method for stimulation and recording of neurophysiologic data. 3,880,144, Cl. 128-2.10B.
Cousin, Maurice Claude, to A. & M. Cousin et Cie Establissements Cousin Freres. Mechanical sweeper. 3,879,788, Cl. 15-42.000.
Coval, Arthur B., to FMC Corporation. Articulated haulage vehicle. 3,880,303, Cl. 214-83.360.
Cox, Arthur T., to Arthur Cox & Sons. Hardware for a sliding door installation. 3,879,912, Cl. 52-720.000.
Cox, William Ervin; and Ferry, Lloyd R., to Northrop Corporation. Projectile delivery system. 3,880,043, Cl. 89-1.50E.
CPC International Inc.: *See—*
Smolin, Martin; Milstein, Norman; Kaye, Irving A.; and Motiuk, Kalmen, 3,880,992.
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Cross, Kenneth R.; and Edenborough, Neville B., to General Motors Corporation. Ceramic combustion liner. 3,880,575, Cl. 431-353.000.
Crown Cork & Seal Company, Inc.: *See—*
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Rizza, Michael C.; and Brown, Delmont D., 3,880,540.
Da Costa, Harry; and Thornton, Charles G., to Motorola, Inc. Apparatus for profiling bonding needles. 3,879,900, Cl. 51-161.000.
Dahmen, Hans Peter, to Bergmann Kabilwerke AG. Lacing device for stranding machines. 3,879,924, Cl. 57-12.000.
Daiichi Seiyaku Co., Ltd.: *See—*
Sakakibara, Shunpei; and Kimura, Terutoshi, 3,880,825.
Daimler-Benz Aktiengesellschaft: *See—*
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Daskalon, Leonard G.; Courduvelis, Constantine I.; and Koukos, Theodore, to B.D.K. Ltd., Inc. Porcelain mix for dental appliances. 3,880,662, Cl. 106-35.000.
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Dauser, William C., Jr., to Heneveld, Lloyd A. Electrical connector. 3,880,489, Cl. 339-98.000.
Davegardh, Carl August Ragnar; and Wetterholm, Gustav Allan, to Nirto Nobel AB. Method in the recovery of trinitromethane(nitroform) from a mixture of trinitromethane, nitric acid and water. 3,880,941, Cl. 260-644.000.
Davidyan, G. Kurt; Kraus, Richard W.; Patrick, Robert D.; and Scott, Leo R., to American Polarizers, Inc. Attachable polarized inner window for conveyances. 3,880,496, Cl. 350-156.000.
Davis, J. Gilbert, II, to Continental Oil Company. Method for well bore mining in an unconsolidated stratum. 3,880,470, Cl. 299-17.000.
Davis, Robert E.: *See—*
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Davy Powergas Limited: *See—*
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Day, Charles Leon. Control for injection molding. 3,881,091, Cl. 219-489.000.
Dayco Corporation: *See—*
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De Beers Industrial Diamond Division Limited: *See—*
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Deeg, Emil W.; Krohn, David A.; and Martel, Leslie B., to American Optical Corporation. Method and apparatus for producing tubing from short glasses. 3,880,634, Cl. 65-73.000.

Deem, William Roy; and Ogden, Keith, to Imperial Chemical Industries Limited. Fluorocarbon compounds. 3,880,798, Cl. 260-42.160.

De Feo, Angelo; Kulina, Mark R.; and Norwood, Earl B., to Curtiss-Wright Corporation. Emergency bearings for rotating shaft systems. 3,880,479, Cl. 308-36.000.

Dega, Robert L., to General Motors Corporation. Corner seal spring for rotary engine. 3,880,555, Cl. 418-121.000.

De Lang, Hendrik; and Dandliker, Rene, to U.S. Philips Corporation. Apparatus for determining the position of an object in an arbitrary cross-section of a beam of radiation. 3,881,105, Cl. 250-225.000.

Delle, Heinz: *See—*
Liebert, Martin; Delle, Heinz; and Kabisch, Gerhard, 3,880,596.

De Luca, Hector F.; Jones, Glenville; and Schnoes, Heinrich K., to Wisconsin Alumni Research Foundation. 1,25-Dihydroxyergocalciferol. 3,880,894, Cl. 260-397.200.

De Marinis, Robert M.; and Hoover, John R. E., to SmithKline Corporation. 7-Trifluorome thylsulfinylacetamido cephalosporins. 3,880,848, Cl. 260-243.00C.

Demasson, Amedee J. Hockey stick carriers. 3,880,336, Cl. 224-45.00S.

Demerson, Christopher A.; Humber, Leslie G.; Asselin, Andre A.; Jirkovsky, Ivo; and Dobson, Thomas A., to Ayerst, McKenna and Harrison Limited. Pyrano-and thiopyranoindole. 3,880,853, Cl. 260-247.5FP.

Demole, Edouard P., to Firmenich S.A. 3,4,7-Trimethyl-2-oxo,-1,6-dioxaspiro(4,5)dec-3-ene. 3,880,888, Cl. 260-343.600.

Denenburg, Richard. Removable module train and trackway therefor. 3,880,084, Cl. 104-20.000.

Denizov, Anatoly Alexeevich; and Nagorny, Vladimir Stepanovich. Varying the hydraulic resistance in a pressure pipe. 3,880,192, Cl. 137-827.000.

Denker, James M., to Nutron Corporation. Fluid devices. 3,880,052, Cl. 91-501.000.

Denki Kogaku Kogyo K.K.: *See—*
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Dennie, Richard H., to Xerox Corporation. Reproduction machine developer apparatus. 3,880,517, Cl. 355-16.000.

Dennison, Allan G.: *See—*
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Denzel, Theodor; and Hoehn, Hans, to E. R. Squibb & Sons, Inc. Derivatives of furo(2,3-d)pyrazolo(3,4-b)pyridines. 3,880,867, Cl. 260-295.00T.

Derderian, Edward J. Machine for closing and sealing erected cartons. 3,879,922, Cl. 53-374.000.

DeRoshia, Garland D., to Clark Equipment Company. Fitting for lifting cargo containers. 3,880,456, Cl. 294-81.0SF.

De Stevens, George: *See—*
Dickel, Daniel Frederick; and De Stevens, George, 3,880,916.

Deutsch, Herman, to Tele-Resources, Inc. Electronic timer with recirculating memory and counter for incrementing the memory. 3,881,156, Cl. 328-129.000.

Deutsche Gold-und Silber-Scheideanstalt vormals Roessler: *See—*
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Deutsche Texaco Aktiengesellschaft: *See—*
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DeVos, Daniel A., to Pittsburgh Corning Corporation. Molding apparatus. 3,880,563, Cl. 425-175.000.

D'Heurle, Francois M.: *See—*
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Diach Products Incorporated: *See—*
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Diamond, Jules B. Multipurpose flat bandage. 3,880,159, Cl. 128-157.000.

Dichter, Hans-Joachim. Method and apparatus for producing ampoules. 3,880,637, Cl. 65-113.000.

Dichter, Michael: *See—*
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Dickel, Daniel Frederick; and De Stevens, George, to Ciba-Geigy Corporation. Cycloaliphatic acids. 3,880,916, Cl. 260-515.00R.

Dickens, Elmer D., Jr., to B. F. Goodrich Company, The. Flame retardant vinyl chloride polymers containing zinc zirconate. 3,880,802, Cl. 260-45.75W.

Didde-Glaser, Inc.: *See—*
Glaser, Donald A.; and Mena, Agustin, 3,880,077.

Didier-Kellogg: *See—*
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Diebold, Incorporated: *See—*
Morello, Herbert; Mountford, George S.; and Keck, Richard E., 3,880,320.

Dietz, Wolfgang Friedrich Wilhelm, to RCA Corporation. Boost regulator with high voltage protection. 3,881,135, Cl. 315-408.000.

Di Giacinto, Joseph A. Method for forcing witloof. 3,879,892, Cl. 47-58.000.

Dill, Frederick H.; and Hauge, Peter S., to International Business Machines Corporation. Automatic ellipsometer. 3,880,524, Cl. 356-118.000.

Diller, Erold R.: *See—*
Thakkar, Arvind L.; and Diller, Erold R., 3,881,005.

Dimension Weld International Corporation, The: *See—*
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Dinzburg, Boris Nisonovich; Smetkin, Jury Alexandrovich; Alexenko, Vladimir Iosifovich; Mikhailov, Vsevolod Andreevich; Lorant, Ivan, Dr.; Seltenreich, Gyozo; Keszei, Jeno; Marton, Gyorgy; Balazsfai, Albert; Donath, Jeno; and Bolcskei, Erno, to Bor-, Cipo-, Szormeipari Kutato Intezet, Parsi Jozsef; and Vsesojuzny Nauchno-Issledovatelsky Institut Plenochnykh Materialov i Iskusstevennoi Kozhi. Process for producing microcellular shaped pieces of dimensional accuracy, particularly shoe soles. 3,880,970, Cl. 264-54.000.

Divan, William J., to Cashin Systems Corporation. Continuous feed bacon slicer. 3,880,035, Cl. 83-420.000.

Diverse Venture Corporation: *See—*
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Diversified Industries, Inc., a/k/a Scullin Steel Company: *See—*
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Dobbins, John P.: *See—*
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Dobson, Thomas A.: *See—*
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Dodge, Gerald F., III: *See—*
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Dohnalik, Joseph J., to Garden City Envelope Company. Envelope blank scoring and feeding apparatus. 3,880,056, Cl. 93-58.100.

Domyan, Frank F., to International Telephone and Telegraph Corporation. Valve actuator. 3,880,054, Cl. 92-129.000.

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Donaldson, James A. Gas migration shield. 3,880,614, Cl. 48-192.000.

Donath, Jeno: *See—*
Dinzburg, Boris Nisonovich; Smetkin, Jury Alexandrovich; Alexenko, Vladimir Iosifovich; Mikhailov, Vsevolod Andreevich; Lorant, Ivan, Dr.; Seltenreich, Gyozo; Keszei, Jeno; Marton, Gyorgy; Balazsfai, Albert; Donath, Jeno; and Bolcskei, Erno, 3,880,970.

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Donham, James E., to Amoco Production Company. Polymer nondispersed drilling fluids. 3,880,764, Cl. 252-8.50A.

Doniger, Jerry: *See—*
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Donjon, Jacques; Grenot, Michel; and Hazen, Jean-Pierre, to U.S. Philips Corporation. Storing optical relay for converting x-ray images which comprises an electro-optic material. 3,881,104, Cl. 250-213.0VT.

Donnel, Roscoe J.: *See—*
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Dorn, Wolfgang; Brandenburg, Heinrich; and Schoffl, Rainer, to Dynamit Nobel Aktiengesellschaft. Partition for rocket engines. 3,879,942, Cl. 60-245.000.

Dosier, Paul A., to Paul Dosier Associates, Inc. Chip removal and holddown device for lateral movement routers. 3,880,047, Cl. 90-12.00D.

Dostal, Donald J.; and Dostal, Ronald W., to Dostal Enterprises, Inc. Ductless air distribution system. 3,879,955, Cl. 62-89.000.

Dostal Enterprises, Inc.: *See—*
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Dostal, Ronald W.: *See—*
Dostal, Donald J.; and Dostal, Ronald W., 3,879,955.

Douglas, Carl L.; Smith, Timothy; and Crenshaw, Richard W. Electrical load control for a motor vehicle. 3,881,128, Cl. 315-83.000.

Douglas, Edward Curtis; Wu, Chung Pao; and Mueller, Charles William, to RCA Corporation. Method of making a semiconductor device. 3,880,676, Cl. 148-1.500.

Douglas, George A.: *See—*
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Dover Corporation: *See—*
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Dowd, Daniel J., to Westvaco Corporation. Chamfering apparatus with coating device. 3,880,114, Cl. 118-75.000.

Dowling, William E.; and Heckethorn, John E. Clamp assembly. 3,879,815, Cl. 24-277.000.

Downey, Raymond E., to Goodyear Tire & Rubber Company, The. Adhesive composition. 3,880,953, Cl. 260-876.00B.

Doyle, William C., Jr.; and Kirkpatrick, Joel L., to Gulf Research & Development Company. Herbicidal N(5-chlorotert.butyl-1,3,4-thiadiazol-2-yl) carboxamides. 3,880,873, Cl. 260-306.80D.

Drake, Charles A., to Phillips Petroleum Company. Catalytic hydrogenation of unsaturated dinitriles employing rhodium as catalytic agent. 3,880,928, Cl. 260-583.00P.
Drake, Charles A., to Phillips Petroleum Company. Catalytic hydrogenation of unsaturated dinitriles. 3,880,929, Cl. 260-583.00P.
Draper, Kenneth George: *See—*
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Drilling, Joseph C.: *See—*
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Duckett, John C.; and Ensley, Rufus Neal, to Dayco Corporation. Rotary anvil construction. 3,880,037, Cl. 83-659.000.
Duclos, Jean. Device for securing containers to carriers. 3,880,090, Cl. 105-366.00C.
Dudis, Charles G.; and Kemper, Charles R. Apparatus for aerating a liquid. 3,880,965, Cl. 261-122.000.
Dudley, Kenneth W.: *See—*
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Duganich, Joseph W. Wide bearing wedge lock. 3,880,392, Cl. 248-324.000.
Dulin, Jacques M.; and Rosar, Edward C., to Industrial Resources, Inc. Air pollution control process for glass manufacture. 3,880,629, Cl. 65-27.000.
Duncan, Farris N.: *See—*
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Black, James Whyte; Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 3,881,016.
Durham, Walter Thomas; Bury, George John; and Swick, Edwin Grant, to Illinois Tool Works Inc. Adhesive fastening device. 3,880,535, Cl. 403-241.000.
Durning, Paul J.; and Robinson, Joel P., to Union Oil Company of California. Method and apparatus for transporting hot fluids through a well traversing a permafrost zone. 3,880,236, Cl. 166-302.000.
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Dvoskin, Boris Vulfovich: *See—*
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Dynagraphic Merchandising Corporation: *See—*
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Dynair Limited: *See—*
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Dynamit Nobel Aktiengesellschaft: *See—*
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Earle, William. Secured mailbox. 3,880,344, Cl. 232-17.000.
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Petrus, Stephen, 3,880,536.
Urban, John A.; Hopkins, Gary L.; and Armstrong, John Keith, 3,880,473.
Eberly, Harry C.; Moody, Thomas B.; and Yatcilla, George, to Sperry Rand Corporation. Feeding mechanisms of a hay baler. 3,880,073, Cl. 100-142.000.
Eble, Thomas E.; and Johnson, Le Roy E., to Upjohn Company, The. Antibiotic bluensin and method of production. 3,880,827, Cl. 260-210.0AB.
Echard, Pierre; and Lacourieux, Jean Louis, to Commissariat a l'Energie Atomique. Sealing device for shaft of machines. 3,880,434, Cl. 277-15.000.
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Eggett, Geoffrey; and Hopkins, Wayne Robert, to Davy Powergas Limited. Preconditioning of anodes for the electrowinning of copper from electrolytes having a high free acid content. 3,880,733, Cl. 204-108.000.
Eigner, Erich, to Osterreichisch-Amerkianische Magnesit Aktiengesellschaft. Mill. 3,880,365, Cl. 241-182.000.
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Elmendorf, Armin; and Etzold, Roland, to Elmendorf, Armin. Method of making a wood fiber board having a relief-textured surface. 3,880,687, Cl. 156-62.200.
Elmer, Arthur Ernest Henry, to Dynair Limited. Fan drives. 3,880,265, Cl. 192-58.00B.
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Black, James Whyte; Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 3,881,016.
Emschermann, Hans Heinrich; Fuhrmann, Bruno; and Huhnke, Dieter, to Felten & Guilleaume Carlswerk AG. Measuring temperature in a very-high temperature environment. 3,880,007, Cl. 73-362.0AR.
Endo, Takeshi; Mitsui, Yoshihiro; and Kamakura, Hiroshi. Stabilized brushless motor drive circuit. 3,881,142, Cl. 318-138.000.
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Fabian, Wolfgang, to BASF Aktiengesellschaft. Manufacture of 3,4,9,-10-perylenetetracarboxylic acid dianhydride pigments having high tinctorial strength. 3,880,890, Cl. 260-345.200.
Fabre, Aime, to "Manta". Weft thread holding device in a loom with fixed weft feeding. 3,880,200, Cl. 139-125.000.
Fabricacion De Maquinas: *See—*
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Farr, Glyn Phillip Reginald, to Girling Limited. Brake failure indicator. 3,879,946, Cl. 60-535.000.
Farr, John B.; and Ward, Ronald W., to Amoco Production Company. Seismic velocity determination. 3,881,168, Cl. 340-15.5BH.
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Felfoldi, Ferenc: *See—*
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Ferrari, Rodolfo D. Electronic sequencer. 3,881,114, Cl. 307-41.000.
Ferro, Armand P.; and Fitzroy, Nancy D., to General Electric Company. Male plug assembly incorporating power supply. 3,880,491, Cl. 339-112.00R.
Ferro, Richard A. Brassiere mold-forming machine. 3,880,561, Cl. 425-144.000.
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Field, Crosby. Method and ice columns system particularly for absorbing heat and radiation. 3,879,958, Cl. 62-354.000.
Field, George Francis; Sternbach, Leo Henryk; and Walser, Armin, to Hoffmann-La Roche Inc. Pyrazino-1,4-diazepines. 3,880,840, Cl. 260-239.30B.
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Fields, Robert E. Connectors. 3,880,452, Cl. 285-177.000.
Finelli, Anthony F., to Goodyear Tire & Rubber Company, The. Container resistant to hydrocarbon materials. 3,880,809, Cl. 260-75.0NH.
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Fleck, Fritz; Kittl, Hans; Schmid, Hans-Rudolf; Schmid, Horst; and Valenti, Salvatore, to Sandoz Ltd. Triazolyl ethenyl phenylene derivatives. 3,880,841, Cl. 260-240.0CA.
Fleischer, Barry. Applicator system for fluids. 3,880,333, Cl. 222-402.180.
Fleischer, Henry. Multiple plate valve. 3,880,402, Cl. 251-212.000.
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Forrest, Alexander C., to Bethlehem Steel Corporation. Method for producing steel in an electric arc furnace. 3,880,648, Cl. 75-13.000.
Forrest, Robert Henry; and Splatt, Reginald John Kingston, to National Research Development Corporation. Electronic switching circuits. 3,881,118, Cl. 307-252.0UA.
Fort, J. Robert; Westphal, James A.; and Juilfs, Donald R., to Geophysical Systems Corporation. Data array network systems. 3,881,166, Cl. 340-15.5TS.
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Fraze, Ermal C. Reinforced easy opening end structure. 3,880,318, Cl. 220-273.000.
Frederick, Walter, Jr., to PPG Industries, Inc. Method and apparatus for monitoring and controlling glass cutting. 3,880,028, Cl. 83-7.000.
Freeman, Harlan G.; Baxter, Gene F.; and Grahm, George, to Weyerhaeuser Company. Method of bonding using rapid curing resin compositions comprising the reaction product of an aldehyde condensation polymer with a primary aromatic amine further reacted with a curing agent. 3,880,694, Cl. 156-331.000.
Freiberger, Robert W.; and Michaels, Elwood S., to Eaton Corporation. Quick change panel fastening system. 3,880,396, Cl. 248-475.00R.
Freiday, Jay Horl, to Combustion Engineering, Inc. Semi-rigid tube supporting tie. 3,880,123, Cl. 122-510.000.
Freidmann, Charles Aubrey; Hofer, Peter; and Lange, Winthrop E., to Mundipharma AG. Bis-(phosphorylated anthralin) compounds in the treatment of psoriasis and arthritis. 3,881,000, Cl. 424-209.000.
Fried, John H., to Syntex Corporation. Production of unsaturated carbocyclic ketones. 3,880,884, Cl. 260-343.20S.
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Fujimoto, Sakae, to Kabushiki Kaisha Ricoh. Method and apparatus for information retrieval. 3,880,510, Cl. 353-26.000.
Fujimura, Kenichi; and Tanaka, Takashi, to Matsushita Electric Industrial Co., Ltd. Multi-channel magnetic head comprising a plurality of single-turn elementary heads. 3,881,193, Cl. 360-123.000.
Fujioka, Richard T.; and Wooldridge, Gerald A., to Fruehauf Corporation. Cantilevered internal shoring. 3,880,415, Cl. 269-48.100.
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Fumia, Arthur, Jr., to Eastman Kodak Company. Photographic sensitizing dyes containing a bridgehead nitrogen. 3,880,844, Cl. 260-240.400.

Funk, John: *See—*
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Gallington, Roger W. Rotary angle of attack indicator. 3,880,002, Cl. 73-180.000.

Gambel, Charles L. Throw-trinket encasement. 3,880,279, Cl. 206-8.000.

Gandhi, Haren S.; Kummer, Joseph T.; and Shelef, Mordecai, to Ford Motor Company. Process for preparing a ruthenium catalyst. 3,880,775, Cl. 252-462.000.

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Ganser, Wilhelm; and Raskin, Gottfried, to Uniroyal Aktiengesellschaft. Apparatus for manufacture of endless belts. 3,880,027, Cl. 82-98.000.

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Gardner, John A., Jr.; and Brown, Merle S., to Jet Spray Cooler, Inc. Liquid dispensing, disposable container for use with a beverage dispenser. 3,880,329, Cl. 222-129.100.

Garingarao, Renato M.; and Palad, Michaelangelo A. Cyclic acid leaching of nickel bearing oxide and silicate ores with subsequent iron removal from leach liquor. 3,880,981, Cl. 423-150.000.

Garnett, John Lyndon; and Martin, Ewan Cameron. Radiation graft polymerization of vinyl pyridine monomers in an amino containing solvent system. 3,880,736, Cl. 204-159.120.

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Gauthier, Pierre, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Heat-exchanger and method for its utilization. 3,880,231, Cl. 165-166.000.

Gay, Michael John, to Motorola, Inc. Voltage regulator having a constant current controlled, constant voltage reference device. 3,881,150, Cl. 323-22.00T.

Gealer, Roy L.; and Braslaw, Jacob, to Ford Motor Company. Process for the conversion of polyurethane foam to a continuous densified sheet of polyurethane. 3,880,977, Cl. 264-321.000.

Gebr. Bohler & Co. AG: *See—*
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George, Richard F., to Keene Corporation. Bearing assembly. 3,880,481, Cl. 308-191.000.

Georges, Michael P. Examination paper scoring assembly. 3,879,863, Cl. 35-48.00B.

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Gerstenberger, Roland W.; and Lindstrand, Arthur E., to Jensen Corporation. Laundry drying apparatus. 3,879,868, Cl. 38-11.000.

Gervais, Edouard; and Chollet, Pierre, to Noranda Mines Limited. Method of forming zinc-aluminum alloys with good machinability. 3,880,679, Cl. 148-13.100.

Gess, Larry C. Apparatus for filling containers. 3,880,211, Cl. 141-258.000.

Gfeller, Martin, to Greiner Electronic AG. Method and apparatus for cleaning the inner and/or outer surfaces of a cuvette. 3,879,795, Cl. 15-302.000.

GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Aktiengesellschaft: *See—*
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Gianardi, Agostino, to Ing. C. Olivetti & C., S.p.A. Fastening device for modular furniture. 3,880,391, Cl. 248-246.000.

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Charbonney, Adrien Maurice, deceased; Therens, Jean-Jacques, legal representative; and Giger, Urs, 3,879,929.

Gilbert, Dixie E., to Phillips Petroleum Company. Bottle with depending support tab. 3,880,312, Cl. 215-100.00R.
Gilker, Jean-Claude, to Institut de Microbiologie et d'Hygiene de Montreal. Process for the filtration of a suspension containing a protein such as an influenza virus vaccine. 3,880,993, Cl. 424-89.000.
Gillett, Albert. Jig. 3,880,543, Cl. 408-109.000.
Gillette Company, The: *See—*
Landy, Herbert G., 3,880,897.
Pasquale, Robert H.; and O'Hare, John, 3,881,082.
Pomfret, Edward E., 3,880,284.
Webster, Milo E., 3,880,605.
Gillies, David; and Willis, Robert Anthony, to Stanhay (Ashford) Limited. Seed drill. 3,880,100, Cl. 111-77.000.
Girard, Harry J. Pipe line pig. 3,879,790, Cl. 15-104.06R.
Girling Limited: *See—*
Farr, Glyn Phillip Reginald, 3,879,946.
Harrison, Anthony William, 3,880,185.
Nicholls, Lawrence George, 3,880,412.
Giuffredi, Giancarlo, to Coster Technolgie Speciali S.p.A. Device for controlling fluid supply and introduction of drawing tubes carried on aerosol valves within containers. 3,880,207, Cl. 141-20.000.
Giulie, Joe D., to Minnesota Mining and Manufacturing Company. Paper binding machine. 3,879,783, Cl. 11-1.00R.
Givaudan Corporation: *See—*
Bozzato, Giuliano; Pesaro, Mario; Schudel, Peter; Hug-Inderbitzin, Marianne; and Erickson, Robert Edward, 3,880,931.
GKN Sankey Limited: *See—*
Howells, Francis John, 3,879,911.
Glaser, Donald A.; and Mena, Agustin, to Didde-Glaser, Inc. Tinting unit for offset printing press. 3,880,077, Cl. 101-219.000.
Glasser, Stuart A.; Hollender, Michael A.; and Miller, Charles H., to Gahm Distributor Inc. Adjustable corner brace assembly. 3,879,774, Cl. 5-203.000.
Glassmeyer, John J., to Pullman Incorporated. Trailer prop operating structure. 3,880,403, Cl. 254-86.00R.
Glaxo Laboratories Limited: *See—*
Fleming, Ian Dunlop; Turner, Michael Keith; and Napier, Eunice Jean, 3,880,713.
James, Arthur Edwin; Fare, Godfrey; Sagar, Brian Frederick; Lucas, Fred; and Mitchell Ian DeGray, 3,880,742.
Glazunov, Sergei Georgievich; Solonina, Olga Petrovna; Ulyakova, Nina Mikhailovna; Kuraeva, Vera Platonovna; Lyapicheva, Nadezhda Fedorovna; and Nikishov, Oleg Alexandrovich. Titanium base alloy. 3,880,655, Cl. 75-175.500.
Gleason Works, The: *See—*
Auble, Ronald E.; and Coleman, Wells, 3,880,267.
Glicksman, Martin; and Farkas, Elizabeth H., to General Foods Corporation. Method of preventing gelation in canned gravy-based pet foods. 3,881,031, Cl. 426-325.000.
Glienke, Peter Otto, to Gutermann & Co. Medium for heat bonding. 3,881,041, Cl. 428-40.000.
Godyn, Adam; Prajsnar, Tadeusz; Rulinski, Jozef; Sikora, Leopold; Wusatowski, Roman; and Zglobicki, Edward, to Instytut Metalurgii Zelaza im. St. Staszica. Drawing device with hydrodynamic lubrication. 3,879,973, Cl. 72 37.000.
Goerth, Helmut: *See—*
Hiller, Heinrich; Schuhmacher, Alfred; and Goerth, Helmut, 3,880,892.
Goldberg, Morris: *See—*
Schwartz, Robert; and Goldberg, Morris, 3,879,849.
Goldenberg, Marvin M.: *See—*
Alaimo, Robert J.; and Goldenberg, Marvin M., 3,880,868.
Goldman, Gerald Martin: *See—*
Salzman, Robert Stephen; and Goldman, Gerald Martin, 3,879,970.
Goldschmidt, Klaus; and Hausberg, Gerhard, to Steag Aktiengesellschaft; and Gottfried Bischoff Bau Kompl. Device for separating so_2 and dust from flue gases. 3,880,597, Cl. 23-283.000.
Golemon, Valia S. Plastic injection molding apparatus. 3,880,208, Cl. 141-82.000.
Golinkin, Herbert S.; and Keske, Robert G., to Standard Oil Company. Poly(alkylenetrimellitate imides) and method of preparation. 3,880,812, Cl. 260-78.30R.
Gooch, Beverley R.: *See—*
Heaslett, Alastair M.; and Gooch, Beverley R., 3,881,194.
Goodale, Richard J. Apparatus for washing and blanching of vegetables. 3,880,068, Cl. 99-478.000.
Goodman, David S.; Selvin, Gerald J.; Langenbach, Jack; Lemm, Willys T.; and Mintz, Wilfred L., to International Telephone and Telegraph Corporation. Low cost sealed connector. 3,880,487, Cl. 339-60.00R.
Goodson, Baxter D.; and Atterbury, Thomas J., to Texas Eastern Transmission Corporation. Composite pipeline prestressed construction. 3,880,195, Cl. 138-172.000.
Goodyear Tire & Rubber Company, The: *See—*
Booher, Harold R., 3,880,475.
Bunts, Harold A., 3,880,220.
Clem, Dennis W., 3,880,020.
Downey, Raymond E., 3,880,953.
Finelli, Anthony F., 3,880,809.
Grant, Douglas, 3,880,088.
Hopper, Roger J., 3,880,816.
Musyt, William; and Tremelin, James D., 3,880,217.
Sawaya, Albert R., 3,880,582.
Googin, John M.; and Schmitt, Charles R., to United States of America, Atomic Energy Commission. Method of making microspheroidal nuclear fuels having closed porosity. 3,880,769, Cl. 252-301.10R.
Gorjukhova, Natalya Mikhailovna: *See—*
Rubin, Leonid Borisovich; Eremeeva, Olga Vladimirovna; Rubin, Andrei Borisovich; Gorjukhova, Natalya Mikhailovna; Ivanov, Andrei Valentinovich; Fraikin, Grigory Yakovlevich; and Gradova, Nina Borisovna, 3,880,717.
Gorman-Rupp Company, The: *See—*
Wolford, Dale E.; Meister, David L.; and Taylor, Charles J., 3,880,553.
Gosney, William Milton, Jr., to Texas Instruments Incorporated. Nonvolatile memory cell. 3,881,180, Cl. 357-23.000.
Gostling, Peter Eric, to C. Evans & Sons Limited. Scaffold and like structures. 3,880,533, Cl. 403-189.000.
Gotoh, Kazuyuki: *See—*
Ichikawa, Mihikiro; Gotoh, Kazuyuki; and Kerman, Stephen E., 3,881,069.
Gottfried Bischoff Bau Kompl.: *See—*
Goldschmidt, Klaus; and Hausberg, Gerhard, 3,880,597.
Gould, Francis E.: *See—*
Shepherd, Thomas T.; and Gould, Francis E., 3,881,026.
Grabb, Frederick G.; Owens, Carl D.; Cripe, Maxwell L.; and Pulaski, Daniel C., to Bendix Corporation, The. Dual valve operated pressure differential servomotor. 3,880,049, Cl. 91-33.000.
Graco Inc.: *See—*
Larson, James H.; and Vork, William D., 3,880,355.
Grado, Joseph F. Replaceable stylus-lever generator module for an electromagnetic cartridge. 3,881,073, Cl. 179-100.41K.
Gradova, Nina Borisovna: *See—*
Rubin, Leonid Borisovich; Eremeeva, Olga Vladimirovna; Rubin, Andrei Borisovich; Gorjukhova, Natalya Mikhailovna; Ivanov, Andrei Valentinovich; Fraikin, Grigory Yakovlevich; and Gradova, Nina Borisovna, 3,880,717.
Graham, John W.: *See—*
Muecke, Thomas W.; and Graham, John W., 3,880,233.
Grahm, George: *See—*
Freeman, Harlan G.; Baxter, Gene F.; and Grahm, George, 3,880,694.
Grandia, Johannes; Potemski, Robert Martin; and Woodall, Jerry McPherson, to International Business Machines Corporation. Isothermal solution mixing growth of solids. 3,881,037, Cl. 427-87.000.
Granger, Charles C. Citrus rake. 3,879,923, Cl. 56-328.000.
Grant Airmass Corporation: *See—*
Grant, Benton H., 3,879,770.
Grant, Benton H., to Grant Airmass Corporation. Fluid operated bathtub lift. 3,879,770, Cl. 4-185.00L.
Grant, Douglas, to Goodyear Tire & Rubber Company, The. Vehicle control system and method. 3,880,088, Cl. 104-168.000.
Grantham, Frederick W. Character analysis educational game. 3,879,861, Cl. 35-21.000.
Grapha-Holding AG: *See—*
Muller, Hans, 3,880,421.
Gray, Milton Weldon, to Sortex Company of North America, Inc. Sorting field corn from sweet corn. 3,880,289, Cl. 209-111.700.
Great Lakes Carbon Corporation: *See—*
Novy, Anton R., 3,880,359.
Greczin, John. Knitting machines including rotatable hold down ring. 3,879,961, Cl. 66-9.00A.
Green, Dwight C. Feeler operated saw guard. 3,880,032, Cl. 83-102.100.
Green, Talmage O., to Snap-on Tools Corporation. Meter translation devices for torque measuring wrenches and the like. 3,879,996, Cl. 73-139.000.
Greenspan, George; and Rees, Richard W., to American Home Products Corporation. Hydroxylation of d-13-alkyl-17α-ethynyl-hydroxygon-4-en-3-one and derivatures thereof. 3,880,895, Cl. 260-397.400.
Gregorian, Razmic S.; and Hoernle, Hans R., to United Merchants and Manufacturers, Inc. Process for treating fabrics and fabrics obtained therefrom. 3,880,581, Cl. 8-114.500.
Greig, Richard G.: *See—*
Brookson, Robert H., Jr.; and Greig, Richard G., 3,879,887.
Greiner Electronic AG: *See—*
Gfeller, Martin, 3,879,795.
Grenley, Dallas G.: *See—*
Lamoria, Lz F.; and Grenley, Dallas G., 3,879,909.
Grenot, Michel: *See—*
Donjon, Jacques; Grenot, Michel; and Hazen, Jean-Pierre, 3,881,104.
Gretter, Joseph Clemens. Line tensioner and building structure. 3,879,805, Cl. 24-71.300.
Grewe, Ferdinand: *See—*
Widdig, Arno; Kuhle, Engelbert; Grewe, Ferdinand; Kaspers, Helmut; Scheinpflug, Hans; and Frohberger, Paul-Ernst, 3,881,018.
Grewer, Rudolf; Hickmann, Herbert; and Welke, Wolfgang, to Thyssen Niederrhein AG Hutten-und Walzwerke. Method of charging a shaft furnace. 3,880,306, Cl. 214-152.000.
Grier, Nathaniel, to Merck & Co., Inc. 3-(Substituted)-2',6'-diloweralkylacrylanilides. 3,880,924, Cl. 260-558.00P.
Grieves, Lowell G.; and Wightman, William S., to Albany International Corporation. Apparatus for producing non-woven papermakers felt. 3,879,820, Cl. 28-4.00R.
Griffin, Lindsay I., Jr.: *See—*
Welty, Albert B., Jr.; and Griffin, Lindsay I., Jr., 3,880,983.

Griffiths, Rupert, to Wilkinson Sword Limited. Razor blades. 3,879,844, Cl. 30-34.00A.

Grisar, Johann Martin; and Blohm, Thomas R., to Richardson-Merrell Inc. Hypoglycemic compositions containing benzhydryllactamimide derivatives. 3,881,006, Cl. 424-244.000.

Griwatz, Gunther H.; and Bicehouse, Jack L., to Mine Safety Appliances Company. Device for separating liquid from a gas stream. 3,880,626, Cl. 55-485.000.

Gross, Alfred G., Jr.: *See—*
Boltinghouse, Joseph C.; and Gross, Alfred G., Jr., 3,880,606.

Grossman, Walter B.: *See—*
Brajer, Victor; Grossman, Walter B.; and Hosek, William S., 3,880,327.

Grover, Herman Jack, to Suncrest Products, Inc. Grain mill. 3,880,367, Cl. 241-248.000.

Grozinger, Gerhard, to Mayer Cie Maschinenfabrik. Electrical Patterning System for Circular Knitting Machines. 3,879,963, Cl. 66-50.00R.

Grubb, Everett F.: *See—*
Bodner, John J.; Grubb, Everett F.; McCormack, Kenneth J.; and Moore, Ronald H., 3,880,639.

Gruenke, Roger A.; and Lahr, Roy J., to Xerox Corporation. R-R interval histogram instrument system. 3,880,147, Cl. 128-2.06A.

Gruger, Robert W.: *See—*
Byrne, John J.; and Gruger, Robert W., 3,880,386.

Grundmann, Gert: *See—*
Pocker, Erwin; and Grundmann, Gert, 3,881,106.

Grunewald, Gerhard; and Hochgesand, Gerhard, to Metallgesellschaft Aktiengesellschaft. Process for regenerating absorbent solutions used to purify gases. 3,880,615, Cl. 55-44.000.

GTE Automatic Electric Laboratories Incorporated: *See—*
Beeman, Robert H.; and Burns, Robert V., 3,881,062.
Macrander, Max S.; and Kowalik, Ronald F., 3,881,066.
Macrander, Max S.; Kowalik, Ronald F.; and Fleischfresser, Gerald H., 3,881,067.
Orchard, Henry J.; and Schmidt, Charles E., 3,881,158.

GTE Laboratories Incorporated: *See—*
Buhrer, Carl F., 3,880,673.
Haugsjaa, Paul O.; and Casella, Daniel C., 3,880,572.

GTE Sylvania Corporation: *See—*
Buescher, William E., 3,879,830.

GTE Sylvania Incorporated: *See—*
Boots, Wendell K.; Buescher, William E.; and Kerstetter, Donald R., 3,881,126.
Buescher, William E.; and Kerstetter, Donald R., 3,881,124.
Chenot, Charles F., 3,880,770.
Klauck, David Edward, 3,881,058.
Shaffer, Francis N., 3,880,768.

Gubri, Leon. Assemblies comprising foot rungs, for example for ladders. 3,880,257, Cl. 182-228.000.

Guenther, Lloyd M., to Chevron Research Company. Heat-setting means in a thermoplastic yarn rebound texturizing apparatus. 3,879,819, Cl. 28-1.400.

Gulf Research & Development Company: *See—*
Doyle, William C., Jr.; and Kirkpatrick, Joel L., 3,880,873.

Gulf & Western Manufacturing Company: *See—*
Byrne, John J.; and Gruger, Robert W., 3,880,386.

Gulf and Western Manufacturing Company (Hastings): *See—*
Sapolsky, Roger, 3,880,034.

Gulf & Western Metals Forming Company: *See—*
Tischler, Henry J., 3,880,467.

Gunderson, Ralph R. Mechanism for adjusting deflector for discharge chute of snow removal machine. 3,879,866, Cl. 37-43.00R.

Gunmaster Industries Corporation: *See—*
Nicosia, Joseph T., 3,881,087.

Gunnergaard, Marius, to Dansk Industri Syndikat A/S. Apparatus for automatically producing mold parts. 3,880,223, Cl. 164-200.000.

Gurney, John A., to Johnson & Johnson. Spray-spun bandage composition. 3,880,158, Cl. 128-155.000.

Gurries, Raymond A.; and Christensen, Burnett J., to CMI Corporation. Road building machine with two adjustable work implements. 3,880,243, Cl. 172-784.000.

Gusdorf & Sons, Inc.: *See—*
Camilleri, Charles F., 3,880,097.

Guse, Gunter; and Pietsch, Hanns Georg, to Beiersdorf Aktiengesellschaft. Pressure sensitive adhesives. 3,880,813, Cl. 260-78.5BB.

Gustavsson, Karl-Axel G.; and Persson, Holger A., to AB Bahco Ventilation Corporation. Compact filter cells. 3,880,628, Cl. 55-500.000.

Gutermann & Co.: *See—*
Glienke, Peter Otto, 3,881,041.

Guth, Lauren W.; and Roy, Mahlon T., to General Electric Company. Waste disposer apparatus. 3,880,362, Cl. 241-100.500.

Guth, Lauren W.; and Roy, Mahlon T., to General Electric Company. Waste disposer apparatus. 3,880,363, Cl. 241-100.500.

Guthlein, Werner: *See—*
Rittersdorf, Walter; Guthlein, Werner; Berger, Dieter; Rey, Hans-Georg; and Rieckmann, Peter, 3,880,588.

Gysling, Henry J., to Eastman Kodak Company. Copper (II) complexes and photographic elements containing same. 3,880,724, Cl. 204-15.000.

H. E. Crawford Co., Inc.: *See—*
Mahler, Peter A., 3,879,962.

H. J. Langen & Sons Ltd.: *See—*
Langen, Marinus J. M., 3,879,920.

H. K. Porter Company, Inc.: *See—*
Mucka, John R., 3,880,252.

Haarbye, Fredrick O., to P. R. Mallory & Co., Inc. Electrical contact materials containing silver cadmium oxide. 3,880,608, Cl. 228-124.000.

Haas, Antoinette M. Tie cleaning form. 3,880,334, Cl. 223-82.600.

Habegger, James D.; and Huttula, Andrew B., to Rapistan, Incorporated. Sorting conveyor control system. 3,880,298, Cl. 214-11.00R.

Haberle, Fritz; and Riechers, Daniel, to Daimler-Benz Aktiengesellschaft. Bumper for vehicles, especially motor vehicle. 3,880,454, Cl. 293-71.00R.

Haberlin, Hans Paul, to Wheelabrator-Frye, Inc. Method for surface treatment of work pieces. 3,879,902, Cl. 51-319.000.

Habermann, Wolfgang; Nohe, Heinz; and Jaeger, Peter, to BASF Aktiengesellschaft. Manufacture of lead dioxide/titanium composite electrodes. 3,880,728, Cl. 204-38.00A.

Hachiya, Tomoyoshi: *See—*
Miyazawa, Masashi; Sasaji, Ichiro; Hachiya, Tomoyoshi; Toi, Koji; Uzuki, Teruo; and Sato, Naotake, 3,880,918.

Hadziomerovic, Faruk: *See—*
Salihbegovic, Adnan; Matic, Bozidar; Zimonjic, Svetozar; Hadziomerovic, Faruk; Shubladze, Alexandr Michailovich; Okunev, Alexei Pavlovic; Yemeljanov, Stanislav Vasilyevich; and Kostyleva, Nataly Yevgenyevna, 3,880,348.

Haeseler, Harke; Dorn, Ludwig; Moller, Wilhelm; Wokulat, Jorgen; Rubsam, Franz; and Heinze, Gerhard, to Bayer Aktiengesellschaft. Process for production of sulphur trioxide. 3,880,985, Cl. 423-533.000.

Haferl, Peter Eduard, to RCA Corporation. Raster centering circuit. 3,881,134, Cl. 315-398.000.

Hafner, Harold C.; and Tilton, Andre E., to United States of America, Air Force. Thermal tempering of non-oxide glass compositions. 3,880,638, Cl. 65-116.000.

Hafner, Martin, to Siemens Aktiengesellschaft. Lapping device. 3,879,904, Cl. 51-363.000.

Hagen, Hermann, to Motoren-Und Turbinen-Union Munchen GmbH. Retarding means for gas turbine driven vehicles. 3,880,547, Cl. 60-39.16R.

Hagger Company: *See—*
Off, Joseph W. A.; and Wilbanks, Darrel J., 3,880,697.

Hagitani, Akira; Muramatsu, Ichiro; Sakakibara, Shumpei; Abe, Jinnosuke; and Watanabe, Tetsuo, to Toyo Jozo Kabushiki Kaisha. Process for preparing peptides using N-hydroxy succinimide mono-and dichloroacetate esters. 3,880,823, Cl. 260-112.500.

Haldon, Robert Anthony: *See—*
Chapman, Charles Brian; and Haldon, Robert Anthony, 3,880,763.

Hall, Gwendolyn. Athletic supporter with sock supports. 3,880,160, Cl. 128-158.000.

Haller, Hans; and Wendl, Erwin. Method of making a platform structure. 3,879,914, Cl. 52-745.000.

Halliburton Company: *See—*
Jameson, Douglas L., 3,880,003.

Halligan, John F.: *See—*
Capossela, Anthony C., Jr.; Halligan, John F.; and Makaron, Leslie S., 3,881,028.

Halsted, Edwin H.: *See—*
Fannin, Wayne V.; and Halsted, Edwin H., 3,881,143.

Hammann, Ingeborg: *See—*
Hoffmann, Hellmut; and Hammann, Ingeborg, 3,880,958.
Schmidt, Karl-Julius; and Hammann, Ingeborg, 3,880,997.

Handzel, James R.: *See—*
Kennard, Harry M.; Handzel, James R.; and Peloubet, Elmore M., 3,880,326.

Hannan, Peter W., to Hazeltine Corporation. Antenna system for radiating multiple planar beams. 3,881,178, Cl. 343-779.000.

Hannes, Karl; and Rossi, Paul C., to Coats & Clark, Inc. Method of making a cast articulated tool. 3,880,021, Cl. 76-104.00A.

Hans Hoellmueller Maschinenbau: *See—*
Rehm, Alfred; and Eggert, Winfried, 3,880,685.

Hansom, Bernard Stephen; and Ridler, Keith Douglas, to Mettoy Company Limited, The. Razor with a relatively moving blade and anvil assembly. 3,879,845, Cl. 30-45.000.

Hanson, Laurence B.: *See—*
Boom, Clarence O.; and Hanson, Laurence B., 3,880,244.

Hara, Kazuo; Bando, Satoshi; Yoshitake, Toshihiko; and Tasaka, Takeo, to Kuraray Co., Ltd. Uncured unsaturated polyester composition. 3,880,950, Cl. 260-862.000.

Harding, Thomas J. Replaceable drill bit for rotary drilling of bore holes. 3,880,247, Cl. 175-260.000.

Hardman, Gilbert J. Treatment of phosphate slimes. 3,880,703, Cl. 159-47.000.

Hardman & Holden Limited: *See—*
Turner, John Harry Wallice, 3,880,901.

Hardwick, Charles W. Surgical needle apparatus. 3,880,167, Cl. 128-339.000.

Hardy, Kenneth David; Nayler, John Herbert Charles; and Stove, Edward Raymond, to Beecham Group Limited. Penicillin compositions and their administration. 3,881,013, Cl. 424-271.000.

Hardy, William C.: *See—*
Berry, Holland J.; Hardy, William C.; and Zadow, Dale W., 3,880,235.

Harkness, Kenneth A.; Kettunen, D. Mark; Schirtzinger, Paul E.; and Vaught, Kenneth A., to Kenneth Harkness a/k/a Ideanamics. Heat-shrink apparatus for automatically packaging grocery articles. 3,881,089, Cl. 219-388.000.

Harris, Frederick Charles; Ward, Barry; and Barker, Alan Ernest, to Hazard Warning Systems Limited. Road hazard warning device. 3,880,537, Cl. 404-15.000.

Harris, James A. Mobile fluid treatment tank servicing apparatus. 3,880,212, Cl. 141-231.000.

Harris, Marvin E., Jr., to Reynolds Metals Company. Wire unreeling system. 3,879,978, Cl. 72-183.000.

Harrison, Anthony William, to Girling Limited. Control for hydraulic systems. 3,880,185, Cl. 137-493.900.

Harrom, Harley A., to TCI, Inc. Stabilizer for dump box. 3,880,469, Cl. 298-17.0SG.

Harsco Corporation: *See*—
Johnson, Paul R., 3,880,011.

Hart, Wallace L.; Vevang, Gordon D.; and Walkowicz, Herman J., to U.I.P. Engineered Products Corporation. Combination fume oxidizer and asphalt heater. 3,880,143, Cl. 126-343.50A.

Harte, James Richard. Cylindrical calculator. 3,880,349, Cl. 235-87.00R.

Hartford Special Machinery Company, The: *See*—
Morton, Robert D., 3,879,976.

Hartline, Albert G., III, to Allegheny Ludlum Industries, Inc. Corrosion resistant austenitic steel. 3,880,654, Cl. 75-122.000.

Hartman, Arlin P., to American Seating Company. System for expanding and retracting telescoping seating row sections. 3,881,140, Cl. 318-85.000.

Harzer, Peter, to Wandel u. Goltermann. System for measuring transmission characteristics provided with voice communication equipment. 3,881,153, Cl. 324-57.00R.

Hasegawa, Shinichi: *See*—
Ishihara, Takamasa; Tuka, Hirohumi; and Hasegawa, Shinichi, 3,880,789.

Hasegawa, Yukio: *See*—
Fujii, Chiyuki; and Hasegawa, Yukio, 3,880,900.

Hattori, Katsuhiko: *See*—
Miyao, Takayuki; Oya, Minoru; Yamada, Masatoshi; Kuno, Toshitaka; Yamaguchi, Masao; Katagiri, Haruo; Hattori, Katsuhiko; Sato, Masanori; and Toyota Jidosha Kogyo Kabushiki Kaisha, 3,880,017.

Hauge, Peter S.: *See*—
Dill, Frederick H.; and Hauge, Peter S., 3,880,524.

Haughn, David C.; and Gaddi, Peter C. Automatic-level battery cell liquid filling portable device. 3,880,209, Cl. 141-95.000.

Haugsjaa, Paul O.; and Casella, Daniel C., to GTE Laboratories Incorporated. Piezoelectric flash lamp ignition. 3,880,572, Cl. 431-98.000.

Haugwitz, Rudiger D.; and Narayanan, Venkatachala L., to E. R. Squibb & Sons, Inc. Isothiocyanophenyl substituted imidazoles. 3,880,871, Cl. 260-306.70T.

Haupt, Heinrich; and Vernaleken, Hugh, to Bayer Aktiengesellschaft. Process for the manufacture of polycarbonate solutions. 3,880,795, Cl. 260-33.80R.

Hausberg, Gerhard: *See*—
Goldschmidt, Klaus; and Hausberg, Gerhard, 3,880,597.

Hausch, Walter R.; Fieldhouse, John W.; and Kay, Edward L., to Firestone Tire & Rubber Company, The. Resinous adhesive compositions with nitro- and chloro-nitro-alkanes. 3,880,808, Cl. 260-75.0NA.

Hausch, Walter R.; Fieldhouse, John W.; and Kay, Edward L., to Firestone Tire & Rubber Company, The. Adhesive compositions containing aromatic nitro compounds. 3,880,810, Cl. 260-77.50R.

Hawkins, Wallace H. Press for removing bearings. 3,880,604, Cl. 29-252.000.

Hayakawa, Shiro: *See*—
Mimura, Akio; Hayakawa, Shiro; and Iguchi, Takashi, 3,880,740.

Hayashi, Yoshimasa: *See*—
Unoura, Kinya; Oda, Atsushi; Hayashi, Yoshimasa; Kimura, Nobuhiro; Nakata, Tetsuya; and Tokuda, Shingo, 3,880,779.

Hayes, Donald A.: *See*—
Nelson, Norman W.; and Hayes, Donald A., 3,880,315.

Hayes, Millard F., Jr. Vacuum cylinder assembly having angled, tear-shaped, sieve supporting foils. 3,880,711, Cl. 162-357.000.

Hays, Lance G.; and Elliott, David G., to Biphase Engines, Inc. Two-phase engine. 3,879,949, Cl. 60-649.000.

Hazard Warning Systems Limited: *See*—
Harris, Frederick Charles; Ward, Barry; and Barker, Alan Ernest, 3,880,537.

Hazeltine Corporation: *See*—
Hannan, Peter W., 3,881,178.

Hazen, Jean-Pierre: *See*—
Donjon, Jacques; Grenot, Michel; and Hazen, Jean-Pierre, 3,881,104.

Heaslett, Alastair M.; and Gooch, Beverley R., to Ampex Corporation. Electromagnetically switched record/reproduce head having separate windings and core legs for each mode. 3,881,194, Cl. 360-123.000.

Hebron, Terrance J., to Victor Comptometer Corporation. Ribbon feed. 3,880,271, Cl. 197-157.000.

Hecht, Victor, to Stearns, C. Wayne. Control valve. 3,880,130, Cl. 123-119.00B.

Heckethorn, John E.: *See*—
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Heise, Carl-Hermann. Apparatus for manufacturing a coating mass for road constructions. 3,880,410, Cl. 259-159.00R.

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Hellemanns, Gerhard; Rohl, Hermann; Hegenberg, Peter; and Eversmann, Werner, to Chemische Werke Huls Aktiengesellschaft. Process for the continuous production of saturated aliphatic dicarboxylic acids. 3,880,921, Cl. 260-531.00R.

Hellerbach, Joseph: *See*—
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Helmick, B. J. Supporting roller assembly for a sliding panel. 3,879,893, Cl. 49-420.000.

Hemingway, Trevor, to Davy-Loewy Limited. Method and apparatus for pressing concrete panels. 3,880,979, Cl. 264-333.000.

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Herndon, John W., to United States of America, Navy. Wide-angle on-axis projection system. 3,880,509, Cl. 353-12.000.

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Hester, Jackson B., Jr., to Upjohn Company, The. 1-Aminoalkyl-6-phenyl-4H-s-triazolo-[4,3-][1,3,4]benzotriazepines. 3,880,878, Cl. 260-308.00R.

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Hill, David T.; and Loev, Bernard, to SmithKline Corporation. Substituted benzofurans. 3,880,891, Cl. 260-346.20R.

Hill, Michael, to British Ropes Ltd. Filter material for smoking article. 3,880,173, Cl. 131-269.000.

Hiller, Heinrich; Schuhmacher, Alfred; and Goerth, Helmut. Production of 1-amino-4-hydroxyanthraquinones substituted in the 2- and/or 3-positions. 3,880,892, Cl. 260-380.000.

Himmelmann, Wolfgang, to Agfa-Gevaert Aktiengesellschaft. Hardening with a heterocyclic carbamoyl ammonium compound of a photographic material containing a silver halide layer. 3,880,665, Cl. 96-111.000.

Hinderks, Mitja Victor. Closure member and protector. 3,879,895, Cl. 49-462.000.

Hindersinn, Raymond R.; Hopkins, George C.; and Ilardo, Charles S., to Hooker Chemicals & Plastics Corporation. Cured compositions of epoxy resins with 2,6-diketo-N-carboxymethylmorpholine. 3,880,806, Cl. 260-47.0EN.

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Houlihan, William J.; and Nadelson, Jeffrey, to Sandoz-Wander, Inc. Tertiary aminoethyl isochromans and isocoumarins. 3,880,885, Cl. 260-343.20R.
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House, Ralph, to Chevron Research Company. Automatic dishwashing compositions. 3,880,778, Cl. 252-558.000.
Houser, Edwin A.; and Schwindt, Bernell W. Water quality analysis system with multicircuit single shell heat exchanger. 3,880,226, Cl. 165-11.000.
Houston, Richard K.; Ratzlaff, Alvin E.; and Cruikshank, Max W., to Agrecology, Inc. Agricultural implement. 3,880,099, Cl. 111-1.000.
Howard, William G., Jr., to Motorola, Inc. Zener diode structure having three terminals. 3,881,179, Cl. 357-13.000.
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Howells, Francis John, to GKN Sankey Limited. Partitioning. 3,879,911, Cl. 52-588.000.
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Huntley, James B. Emergency fire escape mechanism. 3,880,255, Cl. 182-5.000.
Hunziker, Louis A. Dolly with removable jacking wheel units. 3,880,310, Cl. 214-512.000.
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Ichioka, Eiji, to Ashimori Kogyo Kabushiki Kaisha. Method for turning a flexible tube inside out. 3,880,058, Cl. 93-84.0TW.
Idstein, Walter, to Kalle Aktiengesellschaft. Apparatus for the electrochemical treatment of metal strip. 3,880,744, Cl. 204-206.000.
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Ikehata, Yukio, to Kabushiki Kaisha Daini Seikosha. Hand-setting mechanism for back winding watch. 3,879,933, Cl. 58-68.000.
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Irwin, John A., to General Motors Corporation. Ceramic combustion liner. 3,880,574, Cl. 431-353.000.
Isaacs, Robert O.: *See—*
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Isermann, Friedrich: *See—*
Wagener, Dietrich; Isermann, Friedrich; and Rietschle, Ernst, 3,880,720.
Ishida, Koichi; and Yoneda, Kozo, to Fuji Electric Co., Ltd. Method and device of sampling control. 3,880,352, Cl. 235-150.100.

Ishida, Nakao; Okada, Tsutomu; and Kamata, Akira, to Mitsubishi Chemical Industries, Ltd. 3-(5,7-Dimethyl-2-hydroxy-4-oxo-6,8-decadienyl)-glutarimide. 3,880,858, Cl. 260-281.000.

Ishihara, Masao; Terada, Sadatugu; Mayama, Masayoshi; Kobayashi, Tohru; and Maeda, Riyouzou, to Konishiroku Photo Industry Co., Ltd. Processing silver halide photographic material with a polymeric defoaming agent. 3,880,660, Cl. 96-50.00R.

Ishihara, Takamasa; Tuka, Hirohumi; and Hasegawa, Shinichi, to Sumitomo Chemical Company, Limited. Coating composition comprising polyisocyanate, hydroxyl compound, and tar. 3,880,789, Cl. 260-28.000.

Ishii, Takami; Suzuki, Taro; Takikawa, Naohisa; Kitamura, Sunao; Wakabayashi, Tadamasa; and Kumahara, Hiromi, to UBE Industries Ltd. Method of stabilizing oxymethylene copolymers. 3,880,804, Cl. 260-45.85N.

Isler, Stuart. Training toothbrush. 3,879,791, Cl. 15-167.00R.

Isothermics Incorporated: *See*—
Pessolano, Richard L.; and Rhodes, Robin B., 3,880,230.

Ito, Seiga: *See*—
Suzuki, Takeo; Tomita, Fusao; and Ito, Seiga, 3,880,738.

Itoh, Tuguaki: *See*—
Mizuhara, Yasushi; Kikumoto, Takashi; Abe, Tsuwao; Hitomi, Hiroyuki; Ochiai, Masayasu; and Itoh, Tuguaki, 3,881,148.

ITT Industries, Inc.: *See*—
Belart, Juan; Fink, Werner; Kircher, Dieter; and Von Grunberg, Hubertus, 3,880,476.

ITW Limited: *See*—
Clinch, Colin W. F., 3,879,812.

Ivanov, Andrei Valentinovich: *See*—
Rubin, Leonid Borisovich; Eremeeva, Olga Vladimirovna; Rubin, Andrei Borisovich; Gorjukhova, Natalya Mikhailovna; Ivanov, Andrei Valentinovich; Fraikin, Grigory Yakovlevich; and Gradova, Nina Borisovna, 3,880,717.

Iwade, Mitsuo: *See*—
Nakamura, Toshio; Maeda, Tadao; Kiyotaki, Tomoaki; Katsuhara, Yasuo; Sakamoto, Yoshio; and Iwade, Mitsuo, 3,881,020.

Iwata, Motoko. Cushion. 3,879,775, Cl. 5-341.000.

Iwatani, Katumi; Oota, Takao; and Tabaru, Yutaka, to Omron Tateisi Electronics Co.; and Osaka Motor Co., Ltd. Taximeter. 3,880,350, Cl. 235-92.0DN.

Izawa, Tatsuo, to Nippon Telegraph and Telephone Public Corporation. Method for forming optical waveguides. 3,880,630, Cl. 65-30.000.

J. H. Guild Co., Inc.: *See*—
Fossel, Spencer M., 3,880,161.

J. I. Case Company: *See*—
Baylor, John M., 3,880,478.

Jack, Henry Ross Scarlett; and Richards, Peter Henry, to Triplex Safety Glass Company Limited. Method and apparatus for press bending glass sheets. 3,880,635, Cl. 65-106.000.

Jackson, Gene F. Camper module. 3,880,458, Cl. 296-23.00G.

Jacobs, Gordon B., to General Electric Company. Optical comparator for measuring vibration on a rotating object. 3,879,988, Cl. 73-71.300.

Jacobs, Justin M., Jr.; and Stafford, Neil S. Transportation system. 3,880,085, Cl. 104-88.000.

Jaeger, Peter: *See*—
Habermann, Wolfgang; Nohe, Heinz; and Jaeger, Peter, 3,880,728.

Jaggi, Hans, to Sprecher a Schuh AG. Coupling for the gas-tight connection of two spacedly arranged tubular-shaped casing sections of gas-blast switching installations. 3,881,050, Cl. 174-21.00R.

Jakszt, Werner: *See*—
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James, Arthur Edwin; Fare, Godfrey; Sagar, Brian Frederick; Lucas, Fred; and Mitchell Ian DeGray, to Glaxo Laboratories Limited. β-1,4/β1,3 Glucanase. 3,880,742, Cl. 195-31.00R.

Jameson, Douglas L., to Halliburton Company. Fluid flowmeter. 3,880,003, Cl. 73-231.00R.

Jamieson, John W.; and Weller, Ronald G., to Qume Corporation. Variable displacement apparatus for platen and tractor feed. 3,880,016, Cl. 74-405.000.

Jantzen, Johannes K.; Maxon, Eric K.; and Hinman, Andrew W., to International Video Corporation. Tape extractor for magnetic tape cartridge system. 3,880,382, Cl. 242-195.000.

Japan Society for the Promotion of Machine Industry: *See*—
Kobayashi, Goro; and Murata, Noboru, 3,880,526.

Jarrett, Larry L. Implement marker. 3,880,240, Cl. 172-131.000.

Jeffries, Dale, to R. A. Jones and Company Incorporated. Web handling apparatus and method. 3,880,692, Cl. 156-261.000.

Jellesma, Anne, to Machinefabriek W. Hubert & Co. B.V. Rectangular sieving frame and filter drum provided with a plurality of such sieving frames. 3,880,761, Cl. 210-404.000.

Jenkins, Charles W., to Owens-Illinois, Inc. Blow head with sound energy absorbing means. 3,880,640, Cl. 65-261.000.

Jenny, Ernst, to BBC Brown Boveri & Company Limited. Aerodynamic pressure-wave machine. 3,879,937, Cl. 60-39.450.

Jeno's, Inc.: *See*—
Moline, Roy V., 3,880,069.

Jensen Corporation: *See*—
Gerstenberger, Roland W.; and Lindstrand, Arthur E., 3,879,868.

Jensen, Wayne E.; and Stanfield, Charles Keith, to B. & J. Manufacturing Company. Tire buffing machine blades. 3,879,825, Cl. 29-79.000.

Jerrick, Bruce Michael: *See*—
Petersen, Lawrence Christof; and Jerrick, Bruce Michael, 3,880,528.

Jesme, Philip O., Jr.: *See*—
Mueller, Robert J.; Jesme, Philip O., Jr.; and Calkins, John A., 3,880,113.

Jet Spray Cooler, Inc.: *See*—
Gardner, John A., Jr.; and Brown, Merle S., 3,880,329.

Jewett, Harold A. Portable crossbar for boat use. 3,879,779, Cl. 9-1.00R.

Jewett Refrigerator Company, Inc., The: *See*—
Kaplan, Robert P., 3,880,096.

Jirkovsky, Ivo: *See*—
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Jobe, Marshall W.: *See*—
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Johns-Manville Corporation: *See*—
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Johnson Gage Company, The: *See*—
Johnson, Stanley G., 3,879,854.

Johnson, George E.: *See*—
Barnes, Virgil O.; and Johnson, George E., 3,880,013.

Johnson, John R., to American Optical Corporation. Method and apparatus for determining the refractive characteristics of a lens. 3,880,525, Cl. 356-127.000.

Johnson, John W., to Wyle Laboratories. Crimping Machine. 3,879,834, Cl. 29-237.000.

Johnson & Johnson: *See*—
Gurney, John A., 3,880,158.

Johnson, Le Roy E.: *See*—
Eble, Thomas E.; and Johnson, Le Roy E., 3,880,827.

Johnson, Paul R., to Harsco Corporation. Automatic sampler. 3,880,011, Cl. 73-421.00B.

Johnson, Philip Cowey: *See*—
Chapman, John Frederick; Cundal., John Henry; Gentles, Robert Paul; Johnson, Philip Cowey; and Stephenson, Kenneth, 3,880,781.

Johnson, Robert L.: *See*—
Myers, William P.; and Johnson, Robert L., 3,880,616.

Johnson, Roger E.: *See*—
Augustin, Eugene H.; Johnson, Roger E.; and Rakestraw, Thomas L., 3,880,337.

Johnson, Stanley G., to Johnson Gage Company, The. Screw thread comparator gaging device having ti-point and segmental gaging means using a single indicator. 3,879,854, Cl. 33-199.00R.

Johnston, Mack S. Universal valve system for beer kegs and the like. 3,880,182, Cl. 137-212.000.

Johnston, Mack S. Washing, filling and tapping valve assembly. 3,880,206, Cl. 141-5.000.

Johnston, Samuel Andrew, to Bunker Ramo Corporation. Pressure transducer. 3,880,009, Cl. 73-398.00C.

Jones, Alan Richardson, to Coulter Electronics Inc. Fluid circuit including tube rinsing system and bath level maintaining system. 3,880,589, Cl. 23-253.00R.

Jones, Charles Elmer, Jr.; and MacPherson, William Frederick, to Bell Telephone Laboratories, Incorporated. Bridge lifter for telephone line. 3,881,068, Cl. 179-35.000.

Jones, E. Linn, to Eli Lilly and Company. Treatment of arthritis with mycophenolic acid and derivatives. 3,880,995, Cl. 424-180.000.

Jones, Glenville: *See*—
De Luca, Hector F.; Jones, Glenville; and Schnoes, Heinrich K., 3,880,894.

Jones, Gordon Robert; Shaw, Norman; and Vere, Anthony Worswick, to British Secretary of State for Defence. Synthetic materials and electrical and electronic devices made from them. 3,881,109, Cl. 250-338.000.

Jones, John B., III. Window planter. 3,879,891, Cl. 47-36.000.

Jones, Lary D.: *See*—
Reed, Ronald H.; Drilling, Joseph C.; and Jones, Lary D., 3,880,494.

Jones, Paul, Jr. Trailer for transporting vehicles. 3,880,457, Cl. 296-1.00A.

Jordan, John F.; and Lampkin, Curtis, to D. H. Baldwin Company. Method of coating a glass ribbon on a liquid float bath. 3,880,633, Cl. 65-60.000.

Joslyn Mfg. and Supply Co.: *See*—
Cunningham, Francis V., 3,879,843.

Joy, Herman J., to Cluett Peabody & Co., Inc. Testing device for stretchable fabric under simulated body stresses. 3,879,990, Cl. 73-95.000.

Juby, Peter Frederick; and Hudyma, Thomas William, to Bristol-Myers Company. 5,6-dihydro-11-H-pyrimido[4,5-b][1,4]benzodiazepines. 3,880,855, Cl. 260-256.40F.

Juilfs, Donald R.: *See*—
Fort, J. Robert; Westphal, James A.; and Juilfs, Donald R., 3,881,166.

Jurging, Klaus; and Zwach, Hans, to Hoeschst Aktiengesellschaft. Method of pretreating bands and sheets of steel for one-layer enameling, and electrolytic bath for use in connection therewith. 3,880,727, Cl. 204-34.000.

Juvinall, John W.: *See*—
Butler, Richard L.; and Juvinall, John W., 3,880,750.

Kabisch, Gerhard: *See*—
Liebert, Martin; Delle, Heinz; and Kabisch, Gerhard, 3,880,596.

Kable-und Metallwerke Gutehoffnungshutte AG: *See*—
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Kabushiki Kaisha Daini Seikosha: *See*—
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Kabushiki Kaisha Tokai Tekkosha: *See*—
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Kabushiki Kaisha Toyodo Jidoshiokki Seisakusho: *See*—
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Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Miyao, Takayuki; Oya, Minoru; Yamada, Masatoshi; Kuno, Toshitaka; Yamaguchi, Masao; Katagiri, Haruo; Hattori, Katsuhiko; Sato, Masanori; and Toyota Jidosha Kogyo Kabushiki Kaisha, 3,880,017.

Kabushikikaisha Copal: *See*—
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Kimura, Sachio; and Aoki, Yoshiaki, 3,879,932.

Kageyama, Katsusuke; Maeyashiki, Isamu; Kubota, Koji; Konishi, Shinpachi; and Okumura, Shinji, to Ajinomoto Co., Inc. Method of producing L-serine. 3,880,741, Cl. 195-29.000.

Kahle, Gerald R.; Kitchen, Alonzo G.; and Uraneck, Carl A., to Phillips Petroleum Company. Methoxy silane coupling of block copolymer formed in cyclohexane. 3,880,954, Cl. 260-879.000.

Kaiser Steel Corporation: *See*—
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Kalle Aktiengesellschaft: *See*—
Brandt, Wilhelm; and Bindrum, Irmgard, 3,881,049.
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Witte, Horst, 3,880,372.

Kalopissis, Gregoire; and Vanlerberghe, Guy, to Societe Anonyme dite: L'Oreal. New non-ionic surface-active agents derived from fatty chain diols and method of preparing same. 3,880,766, Cl. 252-173.000.

Kamakura, Hiroshi: *See*—
Endo, Takeshi; Mitsui, Yoshihiro; and Kamakura, Hiroshi, 3,881,142.

Kaman, Charles H. Sound board for stringed instrument. 3,880,040, Cl. 84-291.000.

Kamata, Akira: *See*—
Ishida, Nakao; Okada, Tsutomu; and Kamata, Akira, 3,880,858.

Kamimura, Haruo: *See*—
Kanai, Senshu; Kamimura, Haruo; and Numano, Masachika, 3,879,972.

Kammerer, Werner; Naegele, Erwin; Romann, Peter; Rittmannsberger, Norbert; Knapp, Heinrich; and Merz, Gernot, to Robert Bosch G.m.b.H. Fuel injection system for internal combustion engine. 3,880,125, Cl. 123-32.0EA.

Kamoshita, Katsuzo; and Nakai, Shinji, to Sumitomo Chemical Company, Limited. Process for preparing 3-alkyl-5-t-butylphenols. 3,880,937, Cl. 260-624.00E.

Kampe, Wolfgang; Fauland, Erich; Stach, Kurt; Stork, Harald; and Schmidt, Felix Helmut, to Boehringer Mannheim G.m.b.H. N(6)-disubstituted adenosine compounds. 3,880,829, Cl. 260-211.50R.

Kanai, Senshu; Kamimura, Haruo; and Numano, Masachika, to Nippon Kokan Kabushiki Kaisha. Method and apparatus for removing a plug. 3,879,972, Cl. 72-97.000.

Kanehira, Katsuyuki; and Yamashita, Nobuo, to Olympus Optical Co., Ltd. Endoscope. 3,880,148, Cl. 128-6.000.

Kansai Paint Company Limited: *See*—
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Kapilow, Marvin. Mold for writing implement barrel or the like. 3,880,531, Cl. 401-80.000.

Kaplan, Irving Leonard, to Carl Krasny & Associates, Inc. Automatic stacking machine for bars and the like. 3,880,070, Cl. 100-7.000.

Kaplan, Irving Leonard. Automatic stacking machine for bars and the like. 3,880,273, Cl. 198-34.000.

Kaplan, Irving Leonard. Automatic stacking machine for bars and the like. 3,880,296, Cl. 214-6.0DK.

Kaplan, Robert P., to Jewett Refrigerator Company, Inc., The. Autopsy table. 3,880,096, Cl. 108-141.000.

Kaplan, Sam H., to Zenith Radio Corporation. Shadow mask for use in screening a color cathode-ray tube. 3,881,044, Cl. 428-131.000.

Kappus, Helmut: *See*—
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Karjalainen, Pentti, to Winter Osakeyhtio. Device for mixing of paints and toners. 3,880,408, Cl. 259-72.000.

Karras, Thomas W., to General Electric Company. Flowing vapor high power laser. 3,881,088, Cl. 219-271.000.

Kartridge Pak Co., The: *See*—
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Kasama, Noriyuki: *See*—
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Kashima, Nobukazu: *See*—
Yamanaka, Shigeru; Kashima, Nobukazu; and Mitsugi, Koji, 3,880,718.

Kaspar, Jan; Kieffer, Edouard; and Rosch, Michael, to Ciba-Geigy AG. Process for producing a granular material from a solution and/or suspension. 3,880,968, Cl. 264-37.000.

Kasper, Joseph G., to Tennant Company. Scrubbing machine. 3,879,789, Cl. 15-50.00C.

Kaspers, Helmut: *See*—
Widdig, Arno; Kuhle, Engelbert; Grewe, Ferdinand; Kaspers, Helmut; Scheinpflug, Hans; and Frohberger, Paul-Ernst, 3,881,018.

Katagiri, Haruo: *See*—
Miyao, Takayuki; Oya, Minoru; Yamada, Masatoshi; Kuno, Toshitaka; Yamaguchi, Masao; Katagiri, Haruo; Hattori, Katsuhiko; Sato, Masanori; and Toyota Jidosha Kogyo Kabushiki Kaisha, 3,880,017.

Kato, Hircsi, to Nippon Seiko Kabushiki Kaisha. Method and apparatus for producing the bearing races. 3,879,897, Cl. 51-5.00D.

Kato, Takeo: *See*—
Nakauchi, Shunsaku; and Kato, Takeo, 3,881,186.

Katsuhara, Yasuo: *See*—
Nakamura, Toshio; Maeda, Tadao; Kiyotaki, Tomoaki; Katsuhara, Yasuo; Sakamoto, Yoshio; and Iwade, Mitsuo, 3,881,020.

Katsumata, Mitsuo, to Kokusan Denki Co., Ltd. Breakerless ignition system. 3,880,133, Cl. 123-148.00E.

Katsutoshi, Nakayama: *See*—
Yasuhiro, Tomita; and Katsutoshi, Nakayama, 3,879,987.

Katz, Otto, to A. W. Faber-Castell. Writing utensil. 3,880,530, Cl. 401-65.000.

Kaupp, Josef, to Hoechst Aktiengesellschaft. Polyimides. 3,880,811, Cl. 260-78.0UA.

Kawaguchi, Hiroshi; Tsukiura, Hiroshi; Fujisawa, Kei-ichi; and Numata, Kei-ichi, to Bristol-Myers Company. Antibiotic BU-1880. 3,880,994, Cl. 424-119.000.

Kawaguchi, Mamoru. Blood circulation stimulating apparatus. 3,880,149, Cl. 128-24.00R.

Kawakami, Naoe: *See*—
Ueda, Akiteru; Amano, Hisao; and Kawakami, Naoe, 3,881,147.

Kawamura, Sinichiro, to Hitachi, Ltd. Electro-acoustic transducer. 3,881,074, Cl. 179-115.50R.

Kawazura, Minoru; and Watai, Shigeru, to Toppan Containers Co., Ltd. Continuously feeding apparatus for rolled webs. 3,880,698, Cl. 156-504.000.

Kay, Edward L.: *See*—
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Hausch, Walter R.; Fieldhouse, John W.; and Kay, Edward L., 3,880,810.

Kay, Edward Leo: *See*—
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Kaye, Irving A.: *See*—
Smolin, Martin; Milstein, Norman; Kaye, Irving A.; and Motiuk, Kalmen, 3,880,992.

Kazanecki, Paul J., to Raymond Lee Organization, Inc., The, a part interest. De-acceleration switch operable by release of force on accelerator pedal. 3,881,078, Cl. 200-61.890.

Keck, Richard E.: *See*—
Morello, Herbert; Mountford, George S.; and Keck, Richard E., 3,880,320.

Keene Corporation: *See*—
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Keil, O'Dell F.; and Lincoln, Milan L., to Motorola, Inc. Fixtures for unloading axially aligned components. 3,880,309, Cl. 214-310.000.

Keiper, Fritz: *See*—
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Keister, Alvin L.; Machuszek, Joseph A.; and Machuszek, Joseph M., to Flight Services Unlimited, Inc.; Flight Services Industries, Inc.; and Flight Services Industries, Inc., part interest to each. Jig device for wrapping and packaging ear sets. 3,880,370, Cl. 242-1.000.

Keizer, Sietske, to Stamicarbon, B.V. Process for stabilizing polymers. 3,880,803, Cl. 260-45.85R.

Keller, Wolfgang, to Siemens Aktiengesellschaft. Control of rod diameter responsive to a plurality of corrected parameters. 3,880,599, Cl. 23-301.0SP.

Kelley, Robert A. Tent enclosure. 3,880,459, Cl. 296-27.000.

Kelley, Thomas F.; Dennison, Allan G.; and Waraksa, Anthony J., to Instrumentation Laboratory, Inc. Blood analysis system including a plasma separator. 3,880,592, Cl. 23-259.000.

Kellner, Jordan D., to United Aircraft Corporation. Process for electrodepositing titanium diboride from fused salts. 3,880,729, Cl. 204-39.000.

Kelly, Harold D.; Block, Charles F.; and McDonald, Thomas L., to Masar, Incorporated. Ammonium nitrate plant. 3,881,004, Cl. 423-235.000.

Kelsey-Hayes Company: *See*—
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Kemp, Richard V.: *See*—
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Kennard, Harry M.; Handzel, James R.; and Peloubet, Elmore M., to Thiokol Chemical Corporation. Diaphragm structure for dispensing fluids. 3,880,326, Cl. 222-95.000.

Kennecott Copper Corporation: *See*—
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Khajezadeh, Heshmat, to RCA Corporation. Semiconductor temperature sensor. 3,881,181, Cl. 357-69.000.
Khondker, Azizul H., to American Chain & Cable Company, Inc. Power and free conveyor track section. 3,880,086, Cl. 104-94.000.
Kieffer, Edouard: *See*—
Kaspar, Jan; Kieffer, Edouard; and Rosch, Michael, 3,880,968.
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Arai, Osamu; Kikuchi, Kaoru; and Ogawa, Tomoyuki, 3,879,979.
Kikuchi, Shintaro: *See*—
Yurugi, Shojiro; and Kikuchi, Shintaro, 3,880,850.
Kikuchi, Tomio, to Kabushikikaisha Copal. Device for intermittently driving an electromagnetic device. 3,881,144, Cl. 318-466.000.
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Mizuhara, Yasushi; Kikumoto, Takashi; Abe, Tsuwao; Hitomi, Hiroyuki; Ochiai, Masayasu; and Itoh, Tuguaki, 3,881,148.
Kimball, La Nelle. Weather protective boot. 3,879,865, Cl. 36-7.300.
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Kimura, Sachio; and Aoki, Yoshiaki, to Kabushikikaisha Copal. Device for generating time signals. 3,879,932, Cl. 58-50.00R.
Kimura, Terutoshi: *See*—
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King, John O., Jr. Hole enlarging system. 3,879,980, Cl. 72-393.000.
Kintz, Glenn W. Game table with cable connected sections. 3,880,425, Cl. 273-51.000.
Kinzbach, Robert B. Force transmitting coupling. 3,880,451, Cl. 285-92.000.
Kirby, Raymond L., Jr. Ink pump. 3,880,548, Cl. 415-73.000.
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Kirkpatrick, Joel L.: *See*—
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Kishino, Shigeo; Yamada, Yasuo; Kudamtsu, Akio; Kurahashi, Yoshio; Sumi, Shoozo; Seki, Morisuke; and Shiokawa, Koozo, to Bayer Aktiengesellschaft. O-alkyl-S-substituted-O-napthylphosphorothiolates. 3,880,959, Cl. 260-950.000.
Kishkovsky, Zbignev Nikolaevich: *See*—
Merzhanian, Artemy Arutjunovich; Brusilovsky, Sergei Alexeevich; Sarishvili, Naskid Grigorievich; Kishkovsky, Zbignev Nikolaevich; Bronshtein, Isaac Iosifovich; and Gagarin, Mikhail Alexeevich, 3,881,021.
Kisovec, Adrian V., to Boeing Company, The. Rotary head assembly for rotary wing aircraft. 3,880,551, Cl. 416-134.000.
Kitai, Kiyoshi, to Seiko Koki Kabushiki Kaisha. Automatic setting device for a timer. 3,881,075, Cl. 200-33.00R.
Kitamura, Sunao: *See*—
Ishii, Takami; Suzuki, Taro; Takikawa, Naohisa; Kitamura, Sunao; Wakabayashi, Tadamasa; and Kumahara, Hiromi, 3,880,804.
Kitchen, Alonzo G.: *See*—
Kahle, Gerald R.; Kitchen, Alonzo G.; and Uraneck, Carl A., 3,880,954.
Kitchen, Harry E. Merchandise display for installation on building columns. 3,880,292, Cl. 211-112.000.
Kittl, Hans: *See*—
Fleck, Fritz; Kittl, Hans; Schmid, Hans-Rudolf; Schmid, Horst; and Valenti, Salvatore, 3,880,841.
Kiyotaka Furano: *See*—
Tanigaki, Hidetoshi, 3,881,145.
Kiyotaki, Tomoaki: *See*—
Nakamura, Toshio; Maeda, Tadao; Kiyotaki, Tomoaki; Katsuhara, Yasuo; Sakamoto, Yoshio; and Iwade, Mitsuo, 3,881,020.
Klapholz, Joseph. Multicolor stamp. 3,880,079, Cl. 101-334.000.
Klauck, David Edward, to GTE Sylvania Incorporated. Convertible amplifier system for single and multiple signal sources. 3,881,058, Cl. 179-1.00A.
Klein, Leo A., to Boeing Company, The. Multi-use freight carrier. 3,880,438, Cl. 280-5.00D.
Klein, Max, to Normac, Inc. Aqueous suspension vehicle useful in suspension polymerization system for spheres. 3,880,771, Cl. 252-357.000.
Kleinen, Josef: *See*—
Wunnenberg, Klaus; and Kleinen, Josef, 3,880,601.
Klocke, Hans-Joachim: *See*—
Weiser, Dieter; Stockburger, Dieter; Thoma, Peter; Klocke, Hans-Joachim; Beyse, Hans-Jochen; and Thomae, Heinz, 3,879,855.
Klutchko, Sylvester: *See*—
von Strandtmann, Maximilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin, 3,880,861.
Knapp, Heinrich: *See*—
Kammerer, Werner; Naegele, Erwin; Romann, Peter; Rittmannsberger, Norbert; Knapp, Heinrich; and Merz, Gernot, 3,880,125.
Kneile, Karl: *See*—
Kopp, Wendelin; and Kneile, Karl, 3,880,094.
Kneusel, Raymond H. P., to Crown Cork & Seal Company, Inc. Plug relief valve for pressure containers. 3,880,187, Cl. 137-525.000.
Knifton, John F., to Texaco Inc. Process for preparing halogenides of carboxylic acids. 3,880,898, Cl. 260-408.000.
Knox, Howard Thomas: *See*—
Prete Ernest, Jr.; and Knox, Howard Thomas, 3,879,810.
Knuth, Albert R.: *See*—
Prillig, Elliott B.; Gardella, Libero A.; and Knuth, Albert R., 3,880,116.
Kobayashi, Akio: *See*—
Ooya, Masaki; Suzuki, Masayasu; and Kobayashi, Akio, 3,880,951.
Kobayashi, Goro; and Murata, Noboru, to OKI Electric Industry Co., Ltd.; and Japan Society for the Promotion of Machine Industry. Method and apparatus for measuring the turbidity of fluids. 3,880,526, Cl. 356-208.000.
Kobayashi, Tohru: *See*—
Ishihara, Masao; Terada, Sadatugu; Mayama, Masayoshi; Kobayashi, Tohru; and Maeda, Riyouzou, 3,880,660.
Koch, Werner, to Sandoz Ltd. (a/k/a Sandoz AG). Coumarins and coumarinimides. 3,880,886, Cl. 260-343.20R.
Koenig, Horst: *See*—
Amann, August; Koenig, Horst; Thieme, Peter; Giertz, Hubert; and Kretzschmar, Rolf, 3,881,011.
Koenig, Karl-Heinz: *See*—
Ro[illegible], Wolfgang; Koenig, Karl-Heinz; and Fischer, Adolf, 3,880,903.
Koepcke, Richard Wayne; and Patlach, Alvin Murray, to International Business Machines Corporation. Adaptive digital servo system. 3,881,184, Cl. 360-78.000.
Kohjin Co., Ltd.: *See*—
Nohtomi, Ryohta; Shigeyoshi, Tuyoshi; and Sugiyama, Masayoshi, 3,880,974.
Kohlmeier, Herbert: *See*—
Breher, Rudolf; and Kohlmeier, Herbert, 3,880,558.
Kojabashian, Charles, to American Velcro, Inc. Mirrors having stretched reflective sheet materials. 3,880,500, Cl. 350-310.000.
Kokusai Gijutsu Kaihatsu Kabushiki Kaisha: *See*—
Nakauchi, Shunsaku; and Kato, Takeo, 3,881,186.
Kokusan Denki Co., Ltd.: *See*—
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Komagata, Hideki: *See*—
Sumoto, Misao; Komagata, Hideki; and Matsumoto, Hiroshi, 3,880,976.
Komarek, Ronald J.; and Hume, Gordon L., to Eastman Kodak Company. Apparatus for forming spheroidal particles. 3,880,566, Cl. 425-362.000.
Komiya, Yoshio: *See*—
Tarui, Yasuo; Komiya, Yoshio; and Teshima, Hiroo, 3,880,675.
Komiyama, Yosizo: *See*—
Nakamura, Hiromi; Mochizuki, Zenichi; Abe, Hiroaki; and Komiyama, Yosizo, 3,880,055.
Kondo, Toshio; and Tamura, Hifumi, to Hitachi, Ltd. Ion microprobe analyzer. 3,881,108, Cl. 250-307.000.
Konig, Axel, to Volkswagenwerk Aktiengesellschaft. Apparatus for exhaust gas purification through exhaust gas conversion and exhaust gas recycling. 3,879,943, Cl. 60-278.000.
Koninklijke Machinefabriek Stork, B.V.: *See*—
Schrieken, Jan, 3,880,549.
Konishi, Shinpachi: *See*—
Kageyama, Katsusuke; Maeyashiki, Isamu; Kubota, Koji; Konishi, Shinpachi; and Okumura, Shinji, 3,880,741.
Konishiroku Photo Industry Co., Ltd.: *See*—
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Tomono, Makoto; Nakamura, Ken; Tarumi, Niriyoshi; and Sato, Masayuki, 3,880,577.
Kopp, Wendelin; and Kneile, Karl, to Robert Krause KG. Device for supporting pull out plates in a cabinet. 3,880,094, Cl. 108-74.000.
Koppang, Richard R.; Burge, Harland L., Jr.; Carter, Wallace A.; and Sheffield, Ellis W., to TRW Inc. Burner assembly for providing reduced emission of air pollutant. 3,880,571, Cl. 431-8.000.

Kordesch, Karl V.; and Kozawa, Akiya, to Union Carbide Corporation. Corrosion inhibitor system for alkaline aluminum cells. 3,880,671, Cl. 136-100.00R.

Kornfeld, Edmund C.: *See—*
Bach, Nicholas J.; and Kornfeld, Edmund C., 3,880,856.

Kornis, Gabriel; and Nidy, Eldon G., to Upjohn Company, The. Herbicidal compositions containing m-aminobenzaldoxime compounds. 3,880,645, Cl. 71-98.000.

Korr, Abraham L.; and Walker, Evan Harris, to United States of America, Army. Muzzle attachment for accelerating a projectile. 3,880,044, Cl. 89-8.000.

Kose, Tatsuo: *See—*
Yoshizawa, Toshio; Yamada, Yasuo; Taniguchi, Toshinori; Kose, Tatsuo; Ohchi, Kazuo; and Hori, Kiyokazu, 3,879,925.

Kossey, Paul A.: *See—*
Lewis, Edward A.; Rasmussen, John E.; Heckscher, John L.; Kossey, Paul A.; Whidden, Roger W.; and Stahmann, James R., 3,881,154.

Kossoff, George, to Commonwealth of Australia, The. Cross array ultrasonic transducer. 3,881,164, Cl. 340-1.00R.

Kostitsyn, Evgeny Alexandrovich: *See—*
Voronova, Natalya Alexandrovna; Shevchenko, Anatoly Filippovich; Lafer, Isaak Moiseevich; Dvoskin, Boris Vulfovich; Lavrentiev, Moris Leonidovich; Ostapchuk, Nikolai Petrovich; Kostitsyn, Evgeny Alexandrovich; and Emelyanov, Ivan Yakovlevich, 3,880,411.

Kostyleva, Nataly Yevgenyevna: *See—*
Salihbegovic, Adnan; Matic, Bozidar; Zimonjic, Svetozar; Hadziomerovic, Faruk; Shubladze, Alexandr Michailovich; Okunev, Alexei Pavlovic; Yemeljanov, Stanislav Vasilyevich; and Kostyleva, Nataly Yevgenyevna, 3,880,348.

Kotera, Katsumi; and Hirose, Katsumi, to Shionogi & Co., Ltd. 1-Methylaziridine compounds and production thereof. 3,880,834, Cl. 260-239.00E.

Koukos, Theodore: *See—*
Daskalon, Leonard G.; Courduvelis, Constantine I.; and Koukos, Theodore, 3,880,662.

Koval, Ivan Mikhailovich: *See—*
Troshenkin, Boris Alexandrovich; Solovieva, Galina Ilinichna; Piskunov, Jury Nikolaevich; Ponomarenko, Viktor Germanovich; and Koval, Ivan Mikhailovich, 3,880,702.

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Kowalik, Ronald F.: *See—*
Macrander, Max S.; and Kowalik, Ronald F., 3,881,066.
Macrander, Max S.; Kowalik, Ronald F.; and Fleischfresser, Gerald H., 3,881,067.

Kozacka, Frederick J., to Chase-Shawmut Company, The. Electric fuse for elevated circuit voltages. 3,881,161, Cl. 337-159.000.

Kozawa, Akiya: *See—*
Kordesch, Karl V.; and Kozawa, Akiya, 3,880,671.

Kozuka, Hirotsugu: *See—*
Akiyama, Seikichi; and Kozuka, Hirotsugu, 3,880,984.

Kralowetz, Bruno; and Obtresal, Robert, to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Aktiengesellschaft. Machine tool for the machining of shafts. 3,880,025, Cl. 82-9.000.

Kramer, George M.; and Leder, Frederic, to Exxon Research and Engineering Company. Paraffin isomerization in supercritical fluids. 3,880,945, Cl. 260-683.750.

Kranzler, Ernst; and Kuhlmann, Gerhard, to Robert Bosch G.m.b.H. Shifting arrangement, particularly for effecting axial shifting of gears. 3,880,015, Cl. 74-337.500.

Kraus, Richard W.: *See—*
Davidyan, G. Kurt; Kraus, Richard W.; Patrick, Robert D.; and Scott, Leo R., 3,880,496.

Krc, Alfred E.: *See—*
Szakasits, Julius J.; and Krc, Alfred E., 3,880,587.

Kreag, Malcolm G. Baseball bat having different striking surfaces. 3,880,423, Cl. 273-26.00B.

Kreitsberg, Vitaly Nikolaevich: *See—*
Rusakova, Marina Savvatievna; Podgornova, Valeria Alexandrovna; Kreitsberg, Vitaly Nikolaevich; Ustavschikov, Boris Fedorovich; Farberov, Mark Iosifovich; Turyan, Yakov Iosifovich; and Shvyrkov, Evgeny Pavlovich, 3,880,731.

Kress, Dieter, to Mapal Fabrik fur Prazisionswerkzeuge Dr. Kress KG. Fine-boring tool. 3,880,545, Cl. 408-153.000.

Kretzschmar, Rolf: *See—*
Amann, August; Koenig, Horst; Thieme, Peter; Giertz, Hubert; and Kretzschmar, Rolf, 3,881,011.

Kreutz, Heinz-Wilhelm: *See—*
Voss, Alfred; Kreutz, Heinz-Wilhelm; Kroschel, Heinz; and Strunk, Manfred, 3,880,383.

Krohn, David A.: *See—*
Deeg, Emil W.; Krohn, David A.; and Martel, Leslie B., 3,880,634.

Kroschel, Heinz: *See—*
Voss, Alfred; Kreutz, Heinz-Wilhelm; Kroschel, Heinz; and Strunk, Manfred, 3,880,383.

Krulwich, Lester S. Roller for luggage and other objects. 3,879,798, Cl. 16-18.000.

Kubicek, Donald H., to Phillips Petroleum Company. Hydrogenation of carbon disulfide to methyl mercaptan in presence of hydrogen sulfide. 3,880,933, Cl. 260-609.00R.

Kubota, Koji: *See—*
Kageyama, Katsusuke; Maeyashiki, Isamu; Kubota, Koji; Konishi, Shinpachi; and Okumura, Shinji, 3,880,741.

Kudamtsu, Akio: *See—*
Kishino, Shigeo; Yamada, Yasuo; Kudamtsu, Akio; Kurahashi, Yoshio; Sumi, Shoozo; Seki, Morisuke; and Shiokawa, Koozo, 3,880,959.

Kuehnle, Manfred R., to Coulter Information Systems, Inc. Image recording apparatus for electrophotographic film. 3,880,512, Cl. 355-3.00R.

Kuehnle, Manfred R., to Coulter Information Systems, Inc. Ion producing source for electrostatic recording apparatus. 3,880,514, Cl. 355-3.00R.

Kuhfus, Gerd, to Northern Electric Company, Limited. Speaker grills. 3,880,253, Cl. 181-175.000.

Kuhle, Engelbert: *See—*
Widdig, Arno; Kuhle, Engelbert; Grewe, Ferdinand; Kaspers, Helmut; Scheinpflug, Hans; and Frohberger, Paul-Ernst, 3,881,018.

Kuhlman Corporation: *See—*
Smith, Woodrow Wilson; and Youngquist, Jack, 3,880,414.

Kuhlmann, Gerhard: *See—*
Kranzler, Ernst; and Kuhlmann, Gerhard, 3,880,015.

Kukolja, Stjepan; and Lammert, Steven R., to Eli Lilly and Company. Process for preparing thiazoline azetidinones. 3,880,872, Cl. 260-306.70C.

Kukolja, Stjepan P.: *See—*
Ellis, Alvin I.; Kukolja, Stjepan P.; and Lammert, Steven R., 3,880,880.

Kulina, Mark R.: *See—*
De Feo, Angelo; Kulina, Mark R.; and Norwood, Earl B., 3,880,479.

Kumahara, Hiromi: *See—*
Ishii, Takami; Suzuki, Taro; Takikawa, Naohisa; Kitamura, Sunao; Wakabayashi, Tadamasa; and Kumahara, Hiromi, 3,880,804.

Kummer, Joseph T.: *See—*
Gandhi, Haren S.; Kummer, Joseph T.; and Shelef, Mordecai, 3,880,775.

Kummerman, Henri, to Macgregor International S.A. Slewing access ramp for vehicles. 3,879,784, Cl. 14-71.000.

Kuno, Toshitaka: *See—*
Miyao, Takayuki; Oya, Minoru; Yamada, Masatoshi; Kuno, Toshitaka; Yamaguchi, Masao; Katagiri, Haruo; Hattori, Katsuhiko; Sato, Masanori; and Toyota Jidosha Kogyo Kabushiki Kaisha, 3,880,017.

Kunstovny, Ferdinand; Mayerbock, Gottfried; and Rossmann, Johann, to Gebr. Bohler & Co. AG. Impact strip for impact pulverizers. 3,880,369, Cl. 241-300.000.

Kuraeva, Vera Platonovna: *See—*
Glazunov, Sergei Georgievich; Solonina, Olga Petrovna; Ulyakova, Nina Mikhailovna; Kuraeva, Vera Platonovna; Lyapicheva, Nadezhda Fedorovna; and Nikishov, Oleg Alexandrovich, 3,880,655.

Kurahashi, Yoshio: *See—*
Kishino, Shigeo; Yamada, Yasuo; Kudamtsu, Akio; Kurahashi, Yoshio; Sumi, Shoozo; Seki, Morisuke; and Shiokawa, Koozo, 3,880,959.

Kuraray Co., Ltd.: *See—*
Hara, Kazuo; Bando, Satoshi; Yoshitake, Toshihiko; and Tasaka, Takeo, 3,880,950.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Ooya, Masaki; Suzuki, Masayasu; and Kobayashi, Akio, 3,880,951.
Yoshikawa, Shinsuke; and Sawa, Yuji, 3,880,973.

Kwadas, Edward James: *See—*
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Kyowa Hakko Kogyo Kabushiki Kaisha: *See—*
Suzuki, Takeo; Tomita, Fusao; and Ito, Seiga, 3,880,738.

L. Lawrence Products, Inc.: *See—*
Lawrence, Peter, 3,879,804.

Labana, Santokh S.; and Chang, Yun-Feng, to Ford Motor Company. Powder paint compositions including carboxyl terminated polyether crosslinking agent. 3,880,946, Cl. 260-830.00R.

Labana, Santokh S.; and Chang, Yun-Feng, to Ford Motor Company. Powder coating compositions including carboxyl terminated polyamide crosslinking agents. 3,880,947, Cl. 260-830.00P.

Lacourieux, Jean Louis: *See—*
Echard, Pierre; and Lacourieux, Jean Louis, 3,880,434.

Lafer, Isaak Moiseevich: *See—*
Voronova, Natalya Alexandrovna; Shevchenko, Anatoly Filippovich; Lafer, Isaak Moiseevich; Dvoskin, Boris Vulfovich; Lavrentiev, Moris Leonidovich; Ostapchuk, Nikolai Petrovich; Kostitsyn, Evgeny Alexandrovich; and Emelyanov, Ivan Yakovlevich, 3,880,411.

Lahr, Roy J.: *See—*
Gruenke, Roger A.; and Lahr, Roy J., 3,880,147.

Laing, Graham Sterling: *See—*
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L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Gauthier, Pierre, 3,880,231.

Lalancette, Jean-Marc, to Ventron Corporation. Friedel-Crafts reaction with graphite intercalated Lewis acids. 3,880,944, Cl. 260-671.00C.

Lamb, Robert W. Weaving apparatus method of using and resulting toy. 3,879,823, Cl. 28-15.000.

Lammert, Steven R.: *See—*
Ellis, Alvin I.; Kukolja, Stjepan P.; and Lammert, Steven R., 3,880,880.
Kukolja, Stjepan; and Lammert, Steven R., 3,880,872.

Lamoria, Lz F.; and Grenley, Dallas G., to Dow Chemical Company, The. Process for accelerating cure and enhancing ultimate strength of prefabricated masonry structures. 3,879,909, Cl. 52-309.000.

Lampkin, Curtis: *See—*
Jordan, John F.; and Lampkin, Curtis, 3,880,633.

Landenberger, Peter; Treutel, Georg; and Schuttrichkeit, Heinz, to Metallgesellschaft Aktiengesellschaft. Process and apparatus for winding yarns and the like. 3,880,371, Cl. 242-35.50R.

Landgraf, Hermann, to Siemens Aktiengesellschaft. Turbine unit for dentists. 3,879,851, Cl. 32-26.000.

Landy, Herbert G., to Gillette Company, The. Method of making acyl esters of hydroxy alkane sulfonates. 3,880,897, Cl. 260-400.000.

Lane, Clyde H., to United States of America, Air Force. Method of making substrates for microwave microstrip circuits. 3,880,723, Cl. 204-12.000.

Lang, John L. Process for preparing organometallic compounds. 3,880,743, Cl. 204-165.000.

Lange, K. Robert; and Hsu, Yuan Tsun, to Betz Laboratories, Inc. Method for scrubbing gases derived from blast furnaces. 3,880,620, Cl. 55-72.000.

Lange, Winthrop E.: *See—*
Freidmann, Charles Aubrey; Hofer, Peter; and Lange, Winthrop E., 3,881,000.

Langen, Marinus J. M., to H. J. Langen & Sons Ltd. Machine for forming wrap-around shipper packages. 3,879,920, Cl. 53-63.000.

Langenbach, Jack: *See—*
Goodman, David S.; Selvin, Gerald J.; Langenbach, Jack; Lemm, Willys T.; and Mintz, Wilfred L., 3,880,487.

Langer, Arthur W., Jr.; and Whitney, Thomas A. Separation and purification of cis and trans isomers. 3,880,925, Cl. 260-563.00R.

Lankard, John Robert: *See—*
Hodgson, Rodney Trevor; Lankard, John Robert; and Sorokin, Peter Pitirinovich, 3,881,115.

Larkin, Robert F., to Ecolotec Inc. Pivotable rotary brush drive assembly. 3,879,786, Cl. 15-21.00D.

Larsen, Dee E.; and Clements, Michael R., to Amdahl Corporation. Condition code determination and data processing. 3,881,173, Cl. 340-172.500.

Larson, Allan B.: *See—*
Trechsel, Hans W.; Larson, Allan B.; and Ryerse, John A., 3,880,053.

Larson, James H.; and Vork, William D., to Graco Inc. Air blow gun. 3,880,355, Cl. 239-288.300.

Larsson, Erik Olof Roland: *See—*
Nilsson, Kenth Ake Sune; and Larsson, Erik Olof Roland, 3,880,151.

Latka, Thomas L.; and Peck, Glenn L., Jr., to Ford Motor Company. Steering column vehicle switch assembly having rotary and lineal movement. 3,881,076, Cl. 200-61.540.

Latos, Edwin J., to Universal Oil Products Company. Method of preparing an open-celled aromic foam. 3,880,969, Cl. 264-44.000.

Lau, Philip T.; Salminen, Ilmari F.; and Beavers, Leo E., to Eastman Kodak Company. Silver halide emulsion containing acylamidophenol photographic couplers. 3,880,661, Cl. 96-55.000.

Lavrentiev, Moris Leonidovich: *See—*
Voronova, Natalya Alexandrovna; Shevchenko, Anatoly Filippovich; Lafer, Isaak Moiseevich; Dvoskin, Boris Vulfovich; Lavrentiev, Moris Leonidovich; Ostapchuk, Nikolai Petrovich; Kostitsyn, Evgeny Alexandrovich; and Emelyanov, Ivan Yakovlevich, 3,880,411.

Lawrence, Peter, to L. Lawrence Products, Inc. Neck strap. 3,879,804, Cl. 24-3.00C.

Lawrence, Robin: *See—*
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Lawson, Thomas W.: *See—*
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Lear Siegler: *See—*
Murphy, Randall T.; Tame, Omar D.; and Mortimer, Clifford L., 3,880,464.

Lear Siegler Inc.: *See—*
Ware, Nathan C., 3,880,450.
Wootten, John A.; and Rives, George S., 3,880,138.

Leas, Jeffrey Alan: *See—*
Leas, Vernon E.; and Leas, Jeffrey Alan, 3,880,330.

Leas, Vernon E.; and Leas, Jeffrey Alan, to Diverse Venture Corporation. Liquid dispensing system and receptacle therefor. 3,880,330, Cl. 222-136.000.

Leavitt, Richard I., to Mobil Oil Corporation. Enzyme catalyzed oxidations of hydrocarbons. 3,880,739, Cl. 195-28.00R.

Leder, Frederic: *See—*
Kramer, George M.; and Leder, Frederic, 3,880,945.

Ledig, Kurt W.; and Herbst, David R., to American Home Products Corporation. 7-Azaindole fused heterocyclic compounds. 3,880,870, Cl. 260-296.00P.

Ledig, Kurt W.: *See—*
Herbst, David R.; and Ledig, Kurt W., 3,880,866.

Lee, Bong Kuk, to E. R. Squibb & Sons, Inc. Cephalosporin derivatives. 3,880,842, Cl. 260-240.00G.

Lee, Bunge: *See—*
Story, Paul Richard; Lee, Bunge; and Busch, Peter, 3,880,882.

Lee, Charles D., Jr.; and Henderlite, James H., III, to Parks-Cramer Company. Apparatus and method for severing textile fabric. 3,880,201, Cl. 139-302.000.

Lee-Mason Tools Ltd.: *See—*
Mason, Leonard, 3,880,248.

Lees, Robert; and Braswell, William Dorne, to Allied Chemical Corporation. Alignment system for multiple yarn ends. 3,880,338, Cl. 226-91.000.

Leeson, George Joseph William. Device for squeezing tubes of paste. 3,880,328, Cl. 222-100.000.

Legille, Edouard, to S.A. Des Anciens Etablissements Paul Wurth. Drive and support mechanism for rotary and angularly adjustable member. 3,880,302, Cl. 214-35.00R.

Legrand, Bernard: *See—*
Andre, Marcel; Legrand, Bernard; and Montigaud, Jean-Marie, 3,881,093.

Lehmann, Joseph L.; and Lynch, Frank, to Weston Instruments, Inc. Fully digital spectrum analyzer using time compression and discrete fourier transform techniques. 3,881,097, Cl. 235-156.000.

Lehmann, Rolf, to Escher Wyss Limited. Roll for a rolling mill. 3,879,827, Cl. 29-116.0AD.

Leidy, Ivan P. Archer's steady rest. 3,880,136, Cl. 124-30.00R.

Lemelson, Jerome H. Scanning system. 3,881,053, Cl. 178-6.800.

Lemm, Willys T.: *See—*
Goodman, David S.; Selvin, Gerald J.; Langenbach, Jack; Lemm, Willys T.; and Mintz, Wilfred L., 3,880,487.

Len, Joseph F.; and Rankin, Peter M., to United States of America, Army. Frequency agile-baseband sidelobe canceller. 3,881,177, Cl. 343-18.00E.

Lenz, Arnold; and Rogler, Walter, to Dynamit Nobel Aktiengesellschaft. Method for the effective dispensation of oxidation-and/or moisture-sensitive materials. 3,880,179, Cl. 137-14.000.

Lenz, Arnold: *See—*
Von Metnitz, Harald; Bleh, Otto; and Lenz, Arnold, 3,880,915.

Leonard, George E., to Kartridge Pak Co., The. Overcap seater for aerosol containers. 3,879,921, Cl. 53-325.000.

Lerner, Hershey, to Automated Packaging Systems, Inc. Method for packaging articles. 3,879,918, Cl. 53-30.000.

Lesczynski, Michael: *See—*
Raineri, Carlo J.; Mandy, Zoltan P.; Lesczynski, Michael; Styron, James S.; and Akerhielm, George, 3,880,756.

Lestina, Gregory James; and Bush, Walter Monroe, to Eastman Kodak Company. Photographic elements containing oxichromic compounds with reduced azomethine linkages. 3,880,658, Cl. 96-29.00D.

Leverton, Peter. Constrictible band clips. 3,879,811, Cl. 24-281.000.

Levin, Ezra, to VioBin Corporation. Reconstituted egg product and method of preparing. 3,881,034, Cl. 426-541.000.

Levine, Marshall S.; and Faulkner, Albert A., to Geometric Data Corporation. Automatic blood smear device. 3,880,111, Cl. 118-4.000.

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Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, 3,881,009.

Libertiny, George Z., to Ford Motor Company. Strain gage transducer. 3,879,995, Cl. 73-133.00R.

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Keil, O'Dell F.; and Lincoln, Milan L., 3,880,309.

Lindroth, Herbert L.; and Barker, Carl E., to Industrial Engineering and Equipment Co. Electrical cartridge-type heater. 3,881,163, Cl. 338-302.000.

Lindsey, Keith E.; and Lindsey, L. E. Hot conductor dead end clamp. 3,879,809, Cl. 24-135.00M.

Lindsey, L. E.: *See—*
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Lindstrand, Arthur E.: *See—*
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Lingrand, Michel A.: *See—*
Chatourel, Pierre R.; and Lingrand, Michel A., 3,880,222.

Linker, Frank V.; Crognale, Caesar; and Sotiropoulos, Hippocrates. Method and apparatus for straightening electronic components. 3,880,205, Cl. 140-147.000.

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Thien, Gerhard; and Fachbach, Heinz, 3,880,134.

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Litle, Richard L. Electronic teaching aid. 3,879,860, Cl. 35-9.00C.

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Liu, Wai-Min; and Donnel, Roscoe J., to Xerox Corporation. Zoom lens assembly. 3,880,498, Cl. 350-184.000.

Lockhart, James Albert, Jr., to Burroughs Corporation. Capacitor socket for a dual-in-line package. 3,880,493, Cl. 339-147.00R.

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Loeffelman, Howard G., to Flexwrap Corporation. Container for dispensing rolled material. 3,880,287, Cl. 206-397.000.

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Loev, Bernard. N-cycloalkyl and N-cycloalkanealkylthioamides. 3,880,860, Cl. 260-283.00S.

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Loevenich, Josef, to Babcock & Wilcox Limited. Braking collar for hinged beater arms of a hammer mill, used especially for grinding of fuel. 3,880,366, Cl. 241-194.000.

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Logue, Joseph C., to International Business Machines Corporation. Method of manufacturing multi-function LSI wafers. 3,879,839, Cl. 29-574.000.

Lohr & Bromkamp GmbH: *See—*
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Long, Lennart E., to United States of America, Transportation. Universal function module. 3,880,610, Cl. 29-625.000.

Longo, Stephen H., Jr. Container. 3,880,342, Cl. 229-27.000.

Lorain Products Corporation: *See—*
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Loxham, John; and Dinsdale, Jack, to Cranfield Institute of Technology. Gear grinder with digital control. 3,879,898, Cl. 51-33.00W.

LSI Systems Incorporated: *See—*
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Luckenbach, Roy; and Funk, John, to Burlington Industries, Inc. Method for dyeing textiles. 3,880,583, Cl. 8-158.000.

Lundmark, Lars-Erik, to Ingenjorsfirma B-Projekt Aktiebolag. Continuous hardboard production. 3,880,975, Cl. 264-119.000.

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Lunn, William H. W., to Eli Lilly and Company. 6-Hydrazono penicillins and method of preparation thereof. 3,880,837, Cl. 260-239.100.

Lusby, William E.: *See—*
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Luthe, Fred Joseph, to Fisher Controls Company, Inc. Multistage noise reducing flow control valve. 3,880,399, Cl. 251-121.000.

Luxa, Gunther; and Jakszt, Werner, to Siemens Aktiengesellschaft. Valve regulating means disposed between HV switching apparatus and over voltage arresting mechanism maintaining pressure differential therebetween. 3,881,138, Cl. 317-59.000.

Luzzi, John J.: *See—*
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MacMaster, George H.; and Dudley, Kenneth W., to United States of America, Navy. Bucking samarium cobalt magnets for crossed field devices. 3,881,127, Cl. 315-39.710.

MacPherson, William Frederick: *See—*
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Maeda, Shigeo; Ozutsumi, Minoru; Niimura, Isao; and Okazaki, Hideo, to Hodogaya Chemical Co., Ltd. Process for preparing colored polyurethane. 3,880,797, Cl. 260-37.00N.

Maeda, Tadao: *See—*
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Mahadevan, Parameswar: *See—*
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Maier, Hans: *See—*
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Mallams, Alan K.; Tkach, Richard W.; Weinstein, Marvin J.; and Wagman, Gerald H., to Schering Corporation. Antibiotics 66-40B and 66-40D from micromonospora inyoensis. 3,880,828, Cl. 260-210.0AB.

Mallery, Robert G., to Robert Mallery Lumber Corp. Wood chipping apparatus. 3,880,215, Cl. 144-39.000.

Maltz, Georg: *See—*
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Mandell, Robert B.: *See—*
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Mangos, James. Sandwich die set. 3,880,038, Cl. 83-685.000.

Mann, James A., to United States of America, Army. Pressure check apparatus for electrical connector contacts. 3,879,997, Cl. 73-141.00R.

Mannesmann AG: *See—*
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Markowski, Edwin P.; and Pepi, Jerome S., to Barry Wright Corporation. Resilient fastener. 3,880,041, Cl. 85-70.000.

Markowski, Stanley J., to United Aircraft Corporation. Combustion inlet diffuser employing boundary layer flow straightening vanes. 3,879,939, Cl. 60-39.650.

Marley Company, The: *See—*
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Marmer, William N.; Serota, Samuel; and Maerker, Gerhard, to United States of America, Agriculture. Process for acylating functional groups bearing active hydrogen with isopropenyl esters of long-chain fatty acids. 3,880,830, Cl. 260-212.000.

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Marteau, Antoinette Danvin Epouse: *See—*
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Marteau, Robert; and Marteau, Antoinette Danvin Epouse. Process for the production of karite nut butter. 3,880,899, Cl. 260-412.200.

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Martella, Mario A., to Dayton Reliable Tool & Mfg., Co. Easy open push button ecology end. 3,880,316, Cl. 220-268.000.

Martin, Edward F., Jr., to United States of America, Navy. Aircraft canopy ejection. 3,880,387, Cl. 244-121.000.

Martin, Edward J. Centrifugal spring type article projecting device. 3,880,135, Cl. 124-8.000.

Martin, Ewan Cameron: *See—*
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Martin, John K., to Fabricacion De Maquinas. Sheet stacking apparatus. 3,880,297, Cl. 214-6.00H.

Martin, Merrill D. Conveyor system for conveying sheets. 3,880,420, Cl. 271-184.000.

Martinez, Maria Navar. Apparatus for making tortillas and the like. 3,880,064, Cl. 99-349.000.

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Mason, Charley Mack, to Sun Oil Company. Underwater drilling pollution control curtain. 3,879,951, Cl. 61-1.00R.

Mason, John S. Counteractuated articulated waterwheels. 3,880,552, Cl. 416-119.000.

Mason, Leonard, to Lee-Mason Tools Ltd. Valve sleeve for use in association with oilfield hydraulic jar tool. 3,880,248, Cl. 175-297.000.

Mason, Lowell M., to General Electric Company. Method for establishing winding lead wires for windings supported on magnetic cores. 3,879,841, Cl. 29-596.000.

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Massie, Stephen N., to Universal Oil Products Company. Hydroformylation using aged zeolite-alumina hydrosol dispersion. 3,880,938, Cl. 260-632.0HF.

Massy, Derek James Rowland; Winterbottom, Kenneth; Barber, Albert John; and McCartney, James, to Ciba-Geigy AG. Treatment of fibres. 3,881,047, Cl. 428-378.000.

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McCabe, Terrill R. Golfer club including indicators for aligning golfer's head relative thereto. 3,880,430, Cl. 273-183.00D.

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McLaughlin, Robert L., to United States of America, Air Force. Two-coupler microwave frequency discriminator with internal adjustable delay line. 3,881,157, Cl. 329-116.000.

McNeal, Walter P., to General Electric Company. Electrical insulators. 3,880,194, Cl. 138-128.000.

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McPhee, Charles J., to American Hospital Supply Corporation. Collapsible medical liquid bottle with calibration and label orienting hanger structure. 3,880,311, Cl. 215-7.000.

McRee, Robert Elmer, Jr., to Environmental Control Products, Inc. Metering apparatus for incinerator ash pit. 3,880,098, Cl. 110-8.00R.

McWilliams, Joseph E. Mobile storage and displaying arrangement for pictorial art. 3,879,871, Cl. 40-78.070.

Mednick, Philip. Reclining chair. 3,880,462, Cl. 297-84.000.

Megahed, El Sayed; and Peters, Randall W., to ESB Incorporated. Battery barrier and battery. 3,880,672, Cl. 136-111.000.

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Melton, Rosser B., Jr.; Colburn, John W., Jr.; and Wood, Charles D., III, to Southwest Research Institute. Combustion method and apparatus for generating repetitive explosions. 3,880,568, Cl. 431-1.000.

Meltzer, Robert I., to Warner-Lambert Company. 6β-Azido-17-cycloalkylmethyl-4,5α-epoxymorphinan-3-ols. 3,880,862, Cl. 260-285.000.

Meltzer, Robert I., to Warner-Lambert Company. 17-Aralkyl-6 beta-azido-4,5 alpha-epox-ymorphinan-3-01°. 3,880,863, Cl. 260-285.000.

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Menke, Josef-Ferdinand; Pusch, Gunter; and Roth, Siegfried, to Eltro GmbH & Co. Optical apparatus for selectively forming images of different field sizes in the same image plane. 3,881,103, Cl. 250-203.00R.

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Merz, Gernot: *See—*
Kammerer, Werner; Naegele, Erwin; Romann, Peter; Rittmannsberger, Norbert; Knapp, Heinrich; and Merz, Gernot, 3,880,125.

Merzhanian, Artemy Arutjunovich; Brusilovsky, Sergei Alexeevich; Sarishvili, Naskid Grigorievich; Kishkovsky, Zbignev Nikolaevich; Bronshtein, Isaae Iosifovich; and Gagarin, Mikhail Alexeevich. Champagnization of wine in a continuous stream. 3,881,021, Cl. 426-15.000.

Messera, Dominic: *See—*
Messera, Louis; and Messera, Dominic, 3,879,971.

Messera, Louis; and Messera, Dominic. Lock key ejector. 3,879,971, Cl. 70-388.000.

Messerschmitt-Blokow-Blohm GmbH: *See—*
Pocker, Erwin; and Grundmann, Gert, 3,881,106.

Metallgesellschaft Aktiengesellschaft: *See—*
Grunewald, Gerhard; and Hochgesand, Gerhard, 3,880,615.
Landenberger, Peter; Treutel, Georg; and Schuttrichkeit, Heinz, 3,880,371.

Mettoy Company Limited, The: *See—*
Hansom, Bernard Stephen; and Ridler, Keith Douglas, 3,879,845.

Metzger, Karl Georg: *See—*
Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, 3,881,009.

Michaelis, Jack H.: *See—*
Clark, John P.; Malcik, Frank J.; and Michaelis, Jack H., 3,880,095.

Michaels, Elwood S.: *See—*
Freiberger, Robert W.; and Michaels, Elwood S., 3,880,396.

Michigan Chemical Corporation: *See—*
Anderson, Arnold L., 3,880,800.
Anderson, Arnold L., 3,880,801.

Mikhailov, Vsevolod Andreevich: *See—*
Dinzburg, Boris Nisonovich; Smetkin, Jury Alexandrovich; Alexenko, Vladimir Iosifovich; Mikhailov, Vsevolod Andreevich; Lorant, Ivan, Dr.; Seltenreich, Gyozo; Keszei, Jeno; Marton, Gyorgy; Balazsfai, Albert; Donath, Jeno; and Bolcskei, Erno, 3,880,970.

Miles, John C. Propulsion device for water craft. 3,880,107, Cl. 115-21.000.

Miller, Charles G., to California Institute of Technology. Compact, high intensity arc lamp with internal magnetic field producing means. 3,881,132, Cl. 315-344.000.

Miller, Charles H.: *See—*
Glasser, Stuart A.; Hollender, Michael A.; and Miller, Charles H., 3,879,774.

Miller, Harry E., to Western Electric Company, Incorporated. Wire cutting and insulation stripping apparatus. 3,880,022, Cl. 81-9.50R.

Miller, Norman C., to Rockwell International Corporation. Method of manufacturing a bonded electrical contact for thermoelectric semiconductor element. 3,879,838, Cl. 228-180.000.

Miller, Robert L. Light painting with stepped prisms. 3,880,499, Cl. 350-286.000.

Miller, Roger E., to Western Consumers Industries, Inc. Apparatus for producing molasses food product. 3,880,668, Cl. 127-9.000.

Milleson, Joseph P., to Crepaco, Inc. Apparatus for removably marking a food or beverage container. 3,880,118, Cl. 118-621.000.

Mills, Ivor W.; Kirk, Merritt C., Jr.; and Olenzak, Albert T., to Sun Oil Company of Pennsylvania. Catalytic hydrofinishing of lube oil product of solvent extraction of petroleum distillate. 3,880,747, Cl. 208-87.000.

Milstein, Norman: *See—*
Smolin, Martin; Milstein, Norman: Kaye, Irving A.; and Motiuk, Kalmen, 3,880,992.

Mima, Hiroyuki; Matsuzawa, Tai; Aoki, Katsuo; Hirai, Shin-Ichiro; Ikenaga, Toshiaki; and Okada, Yoshihiro, to Takeda Chemical Industries, Ltd. Pharmaceutical preparations of penicillin compounds for rectal use. 3,881,012, Cl. 424-271.000.

Mimura, Akio; Hayakawa, Shiro; and Iguchi, Takashi, to Asahi Kasei Kogyo Kabushiki Kaisha. Cultivation of epsilon-caprolactam-utilizing microorganism. 3,880,740, Cl. 195-29.000.

Mine Safety Appliances Company: *See—*
Griwatz, Gunther H.; and Bicehouse, Jack L., 3,880,626.

Minnesota Mining and Manufacturing Company: *See—*
Giulie, Joe D., 3,879,783.
Rambosek, George M., 3,880,782.

Mintz, Wilfred L.: *See—*
Goodman, David S.; Selvin, Gerald J.; Langenbach, Jack; Lemm, Willys T.; and Mintz, Wilfred L., 3,880,487.

Mitchell Ian DeGray: *See—*
James, Arthur Edwin; Fare, Godfrey; Sagar, Brian Frederick; Lucas, Fred; and Mitchell Ian DeGray, 3,880,742.

Mitchell, Kim L.: *See—*
Pelton, Charles R.; Mitchell, Kim L.; and Gauger, David H., 3,881,167.

Mitchell, William Eric, to Dunlop Limited. Vehicle wheels. 3,880,219, Cl. 152-404.000.

Mitsubishi Chemical Industries, Ltd.: *See—*
Ishida, Nakao; Okada, Tsutomu; and Kamata, Akira, 3,880,858.
Shibuya, Tatsuo; Hosoya, Takashi; Sudo, Fumio; Hoshino, Tsutomu; Yamada, Sunao; and Hiraoka, Hifumi, 3,880,617.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Abe, Haruhiko, 3,880,684.

Mitsubishi Kakoki Kaisha Ltd.: *See—*
Shibuya, Tatsuo; Hosoya, Takashi; Sudo, Fumio; Hoshino, Tsutomu; Yamada, Sunao; and Hiraoka, Hifumi, 3,880,617.

Mitsugi, Koji: *See—*
Yamanaka, Shigeru; Kashima, Nobukazu; and Mitsugi, Koji, 3,880,718.

Mitsui Shipbuilding and Engineering Co. Ltd.: *See—*
Takeuchi, Tetsuo; and Shiozawa, Kaoru, 3,880,340.

Mitsui Toatsu Chemicals Inc.: *See—*
Yoshikawa, Shinsuke; and Sawa, Yuji, 3,880,973.

Mitsui, Yoshihiro: *See—*
Endo, Takeshi; Mitsui, Yoshihiro; and Kamakura, Hiroshi, 3,881,142.

Miyake, Tokuaki: *See—*
Akashi, Goro; Fujiyama, Masaaki; Yama, Yasuyuki; and Miyake, Tokuaki, 3,881,046.

Miyao, Takayuki; Oya, Minoru; Yamada, Masatoshi; Kuno, Toshitaka; Yamaguchi, Masao; Katagiri, Haruo; Hattori, Katsuhiko; Sato, Masanori; and Toyota Jidosha Kogyo Kabushiki Kaisha, to Aisin Seiki Kabushiki Kaisha; and Kabushiki Kaisha Toyota Chuo Kenkyusho. Hydromechanical transmission. 3,880,017, Cl. 74-687.000.

Miyazawa, Masashi; Sasaji, Ichiro; Hachiya, Tomoyoshi; Toi, Koji; Uzuki, Teruo; and Sato, Naotake, to Ajinomoto Co., Inc. Method of purifying 3,4-dihydroxyphenylalanine. 3,880,918, Cl. 260-519.000.

Mizen, Walter J.: *See—*
Ewald, Jerome T.; and Mizen, Walter J., 3,880,263.

Mizuhara, Yasushi; Kikumoto, Takashi; Abe, Tsuwao; Hitomi, Hiroyuki; Ochiai, Masayasu; and Itoh, Tuguaki, to Hitachi Seiko Ltd. Power supply for electrical processing apparatus. 3,881,148, Cl. 321-47.000.

Mizukoshi, Kanji; Andou, Minoru; and Okuno, Hisao, to Matsushita Electronics Corporation. Method of soldering a semiconductor plate. 3,879,837, Cl. 228-123.000.

Mizuno, Kazuo. Warp tying machine. 3,879,824, Cl. 28-49.000.

Mizutani, Kiyoshi. Gel chromatography material and preparation thereof. 3,880,814, Cl. 260-78.50R.

Mo Clamp Co. Ltd.: *See—*
Mojelski, William, 3,879,814.

Mo, Olav. Pressure resistant caisson. 3,879,952, Cl. 61-46.500.

Moberly, Charles W., to Phillips Petroleum Company. Arylene sulfide polymers. 3,880,815, Cl. 260-79.100.

Mobil Oil Corporation: *See—*
Leavitt, Richard I., 3,880,739.
Snavely, Earl S., Jr.; and Bertness, Theodore A., 3,880,237.

Mochizuki, Zenichi: *See—*
Nakamura, Hiromi; Mochizuki, Zenichi; Abe, Hiroaki; and Komiyama, Yosizo, 3,880,055.

Moerk, John C., Jr.: *See—*
McDowell, Donald J.; and Moerk, John C., Jr., 3,880,541.

Mohan, Raam R.: *See—*
Oswald, Alexis A.; Ryer, Jack; and Mohan, Raam R., 3,880,613.

Mohan, William L.: *See—*
Willits, Samuel P.; and Mohan, William L., 3,881,102.

Mohelnicky, Josef; Zmatlik, Josef; and Jisa, Miloslav, to Statni Vyzkumny Ustav Textilni. Knit-woven fabric. 3,880,202, Cl. 139-383.000.

Mojelski, William, to Mo Clamp Co. Ltd. Clamp. 3,879,814, Cl. 24-248.00C.

Moline, Roy V., to Jeno's, Inc. Apparatus for forming dough shells. 3,880,069, Cl. 99-483.000.

Molins Machine Company, Inc.: *See—*
Taylor, Donald R., 3,880,033.

Moller, Wilhelm: *See—*
Haeseler, Harke; Dorn, Ludwig; Moller, Wilhelm; Wokulat, Jorgen; Rubsam, Franz; and Heinze, Gerhard, 3,880,985.

Molloy, Bryan B., to Eli Lilly and Company. β-Phenyl-β,β-difluoroethylamines. 3,880,927, Cl. 260-570.50R.

Monsanto Company: *See—*
Chupp, John P., 3,881,002.
Coffey, Ronald B.; and Burke, James J., Jr., 3,880,432.
Hug, Delmar O.; and Garabedian, Taniel A., 3,880,942.
Reilly, Joseph R., 3,880,301.

Montecatini Edison S.p.A.: *See—*
Natta, Giulio; Mazzanti, Giorgio; Valvassori, Alberto; and Sartori, Guido, 3,880,819.

Monti, Mario. Machine for finishing textile material, especially knitted fabric, in a continuous manner. 3,879,816, Cl. 26-52.000.

Montigaud, Jean-Marie: *See—*
Andre, Marcel; Legrand, Bernard; and Montigaud, Jean-Marie, 3,881,093.

Moody, Thomas B.: *See—*
Eberly, Harry C.; Moody, Thomas B.; and Yatcilla, George, 3,880,073.

Moon, Jacob R., to Moon Walter Saver, Inc. Water saving method for water closets. 3,879,765, Cl. 4-1.000.

Moon Walter Saver, Inc.: *See—*
Moon, Jacob R., 3,879,765.

Moore and Hanks Company: *See—*
Shook, Hugh Thomas, 3,880,625.

Moore, Ronald H.: *See—*
Bodner, John J.; Grubb, Everett F.; McCormack, Kenneth J.; and Moore, Ronald H., 3,880,639.

Moore, Ronald Haywood, to Imperial Chemical Industries Limited. Reduction process. 3,880,712, Cl. 195-51.00R.

Moorman, Charles J.; and Wagner, Howard S., to Mosler Safe Company, The. Vault protected with electronic time and combination lock. 3,881,171, Cl. 340-164.00R.

Moree, Billy N., to Colwest Corporation. Apparatus for applying tape. 3,880,701, Cl. 156-526.000.

Morello, Herbert; Mountford, George S.; and Keck, Richard E., to Diebold, Incorporated. Rotary cash drawer mechanism for currency dispenser. 3,880,320, Cl. 221-9.000.

Morgan, Donald F., to Amerace Esna Corporation. Bowling ball indicia display means and method of assemblying same. 3,879,876, Cl. 40-327.000.

Morishita, Yuichi: *See—*
Murayama, Teruo; Irizuki, Mamoru; Morishita, Yuichi; Utsumi, Isamu; Murakami, Kanae; and Matsushita, Hiroichi, 3,880,586.

Morris, Clark W., II. Winding device for kites. 3,880,377, Cl. 242-86.50R.

Morse, Frank L. Wrist and finger support for bowlers. 3,880,426, Cl. 273-54.00B.

Mortimer, Clifford L.: *See—*
Murphy, Randall T.; Tame, Omar D.; and Mortimer, Clifford L., 3,880,464.

Morton, David W., to Donaldson Company, Inc. Filter with integral housing. 3,880,627, Cl. 55-499.000.

Morton-Norwich Products, Inc.: *See—*
Alaimo, Robert J.; and Goldenberg, Marvin M., 3,880,868.

Morton, Robert D., to Hartford Special Machinery Company, The. Starter slide and blade assembly for thread roller. 3,879,976, Cl. 72-90.000.

Mosler Safe Company, The: *See—*
Moorman, Charles J.; and Wagner, Howard S., 3,881,171.

Mostek Company: *See—*
Proebsting, Robert J.; and McKenny, Vernon George, 3,881,121.

Motiuk, Kalmen: *See—*
Smolin, Martin; Milstein, Norman; Kaye, Irving A.; and Motiuk, Kalmen, 3,880,992.

Motoren-Und Turbinen-Union Munchen GmbH: *See—*
Hagen, Hermann, 3,880,547.

Motorola, Inc.: *See—*
Da Costa, Harry; and Thornton, Charles G., 3,879,900.
Gay, Michael John, 3,881,150.
Howard, William G., Jr., 3,881,179.
Keil, O'Dell F.; and Lincoln, Milan L., 3,880,309.

Mountford, George S.: *See—*
Morello, Herbert; Mountford, George S.; and Keck, Richard E., 3,880,320.

Mucka, John R., to H. K. Porter Company, Inc. Muffler. 3,880,252, Cl. 181-60.000.

Muecke, Thomas W.; and Graham, John W., to Exxon Production Research Company. Well screen. 3,880,233, Cl. 166-205.000.

Mueller, Charles William: *See—*
Douglas, Edward Curtis; Wu, Chung Pao; and Mueller, Charles William, 3,880,676.

Mueller, Robert J.; Jesme, Philip O., Jr.; and Calkins, John A., to Smead Manufacturing Company. Rod end coating apparatus. 3,880,113, Cl. 118-48.000.

Mullen, Nathaniel John. Asphalt paving vehicles. 3,880,542, Cl. 404-101.000.

Muller, Christian, to Frieseke & Hoepfner GmbH. Hydropneumatic suspension for land vehicles especially tracked vehicles. 3,880,446, Cl. 280-124.00F.

Muller, Hans, to Grapha-Holding AG. Method and arrangement for handling streams of sheet goods. 3,880,421, Cl. 271-259.000.

Muller, Wolfgang; and Dathe, Joachim, to Siemens Aktiengesellschaft. Method of simultaneous double diffusion. 3,880,682, Cl. 148-175.000.

Mundipharma AG: *See—*
Freidmann, Charles Aubrey; Hofer, Peter; and Lange, Winthrop E., 3,881,000.

Munnerlyn, Charles R., to Tropel, Inc. Optical system for objective refractor for the eye. 3,880,501, Cl. 351-8.000.

Murakami, Kanae: *See—*
Murayama, Teruo; Irizuki, Mamoru; Morishita, Yuichi; Utsumi, Isamu; Murakami, Kanae; and Matsushita, Hiroichi, 3,880,586.

Muramatsu, Ichiro: *See—*
Hagitani, Akira; Muramatsu, Ichiro; Sakakibara, Shumpei; Abe, Jinnosuke; and Watanabe, Tetsuo, 3,880,823.

Muraoka, Teruo: *See—*
Mawake, Masaaki; Fujita, Yoshitoshi; Muraoka, Teruo; and Sato, Teruo, 3,881,063.

Murata, Noboru: *See—*
Kobayashi, Goro; and Murata, Noboru, 3,880,526.

Murayama, Teruo; Irizuki, Mamoru; Morishita, Yuichi; Utsumi, Isamu; Murakami, Kanae; and Matsushita, Hiroichi, to Nihon Denshi Kabushiki Kaisha; and Tanabe Seiyaku Co., Ltd. Apparatus for sterilizing ampoules and reject control system therefor. 3,880,586, Cl. 21-102.00R.

Murphy, Joseph I. Apparatus for humidifying and purifying air. 3,879,768, Cl. 4-1.000.

Murphy, Patrick W. Multiple center punch tool. 3,879,848, Cl. 30-366.000.

Murphy, Randall T.; Tame, Omar D.; and Mortimer, Clifford L., to Lear Siegler. Double folding second seat. 3,880,464, Cl. 297-326.000.

Murray, Thomas P., to United States Steel Corporation. Low temperature disappearing filament optical pyrometer. 3,880,522, Cl. 356-46.000.

Muschelknautz, Edgar: *See—*
Bueb, Michael; Feltgen, Karlheinz; Muschelknautz, Edgar; and Rellensmann, Wolfgang, 3,879,927.

Musgrave, Daniel D. Ballistic cutter. 3,879,878, Cl. 42-90.000.

Musyt, William; and Tremelin, James D., to Goodyear Tire & Rubber Company, The. Flexible plastic container. 3,880,217, Cl. 150-.500.

Mutt, Viktor: *See—*
Said, Sami I.; and Mutt, Viktor, 3,880,826.

Myers, John G.: *See—*
McCrea, Donald H.; and Myers, John G., 3,880,618.

Myers, William P.; and Johnson, Robert L., to Bendix Corporation, The. Respiratory support system. 3,880,616, Cl. 55-62.000.

N.L. Industries, Inc.: *See—*
White, Edward L.; and Engelbart, Bernard, 3,880,773.

Nabisco, Inc.: *See—*
Rosengren, Stanley Irving, 3,880,030.

Nadelson, Jeffrey: *See—*
Houlihan, William J.; and Nadelson, Jeffrey, 3,880,885.

Naegele, Erwin: *See—*
Kammerer, Werner; Naegele, Erwin; Romann, Peter; Rittmannsberger, Norbert; Knapp, Heinrich; and Merz, Gernot, 3,880,125.

Nagashima, Shinichiro; Tsuchiya, Kaichi; Sakamoto, Yoshihiro; Yamakami, Hiroshi; and Tomari, Seiji, to Canon Kabushiki Kaisha. Electrophotographic method for colored images. 3,880,656, Cl. 96-1.200.

Nagorny, Vladimir Stepanovich: *See—*
Denizov, Anatoly Alexeevich; and Nagorny, Vladimir Stepanovich, 3,880,192.

Nahas, Nicholas C., to Exxon Research and Engineering Company. Hydrogen manufacturing process. 3,880,987, Cl. 423-657.000.

Nakada, Akira: *See—*
Adachi, Takeshi; and Nakada, Akira, 3,881,057.

Nakai, Shinji: *See—*
Kamoshita, Katsuzo; and Nakai, Shinji, 3,880,937.

Nakamichi, Niro, to Nakamichi Research, Inc. Cassette type three head tape recorder. 3,881,187, Cl. 360-96.000.

Nakamichi Research, Inc.: *See—*
Nakamichi, Niro, 3,881,187.

Nakamura, Hiromi; Mochizuki, Zenichi; Abe, Hiroaki; and Komiyama, Yosizo, to Toshiba Kikai Kabushiki Kaisha. Injection pump for use in hot chamber type die cast machines. 3,880,055, Cl. 92-170.000.

Nakamura, Ken: *See—*
Tomono, Makoto; Nakamura, Ken; Tarumi, Niriyoshi; and Sato, Masayuki, 3,880,577.

Nakamura, Toshio; Maeda, Tadao; Kiyotaki, Tomoaki; Katsuhara, Yasuo; Sakamoto, Yoshio; and Iwade, Mitsuo, to Sumitomo Chemical Company, Limited. Process of preparing aqueous suspension of chloramphenicol palmitate. 3,881,020, Cl. 424-324.000.

Nakane, Yasuji, to Three Bond Co., Ltd. Hydraulic ram. 3,879,771, Cl. 4-255.000.

Nakata, Tetsuya: *See—*
Unoura, Kinya; Oda, Atsushi; Hayashi, Yoshimasa; Kimura, Nobuhiro; Nakata, Tetsuya; and Tokuda, Shingo, 3,880,779.

Nakauchi, Shunsaku; and Kato, Takeo, to Kokusai Gijutsu Kaihatsu Kabushiki Kaisha. Incremental tape drive apparatus for tape recorders. 3,881,186, Cl. 360-90.000.

Nakayama, Norihiko; Furuta, Hiroshi; Andoh, Shizuo; and Urade, Toshinori, to Fujetsu Limited. Gas discharge device having a logic function. 3,881,129, Cl. 315-169.0TV.

Nakayama, Yasuhara, to Kansai Paint Company Limited. Emulsifiers for emulsion polymerization of vinyl monomers. 3,880,793, Cl. 260-29.6RW.

Nalco Chemical Company: *See—*
Premo, John G., 3,880,752.
Watson, James D., 3,880,765.

Napier, Eunice Jean: *See—*
Fleming, Ian Dunlop; Turner, Michael Keith; and Napier, Eunice Jean, 3,880,713.

Narayanan, Venkatachala L.: *See—*
Haugwitz, Rudiger D.; and Narayanan, Venkatachala L., 3,880,871.

Narita, Hiroshi, to Hitachi, Ltd. Regenerative brake control circuit. 3,881,141, Cl. 318-87.000.

Nasser, William E.: *See—*
McLaren, Robin A.; Alcott, Charles A.; and Nasser, William E., 3,880,790.

National Patent Development Corporation: *See—*
Shepherd, Thomas T.; and Gould, Francis E., 3,881,026.

National Research Development Corporation: *See—*
Biddell, David Colin; Sansome, Dennis Hugh; Winsper, Colin Edward; and Young, John Radley, 3,879,974.
Forrest, Robert Henry; and Splatt, Reginald John Kingston, 3,881,118.
Lowe, Stewart Arthur; and Scales, John Tracey, 3,879,766.

National Starch and Chemical Corporation: *See—*
Skoultchi, Martin M., 3,880,956.
Tessler, Martin M., 3,880,832.

National Steel Corporation: *See—*
Wegener, Hans F., 3,880,286.

Natta, Giulio; Mazzanti, Giorgio; Valvassori, Alberto; and Sartori, Guido, to Montecatini Edison S.p.A. Copolymerizates of ethylene and/or higher alpha-olefins with non-conjugated diolefins and process for producing the same. 3,880,819, Cl. 260-80.780.

Nau, Bernard S., to British Hydromechanics Research Association, The. Packing carrier. 3,880,433, Cl. 277-2.000.

Naumann, John R. Probe sheath and process of making same. 3,880,282, Cl. 206-306.000.

Nayler, John Herbert Charles: *See—*
Hardy, Kenneth David; Nayler, John Herbert Charles; and Stove, Edward Raymond, 3,881,013.

Naylor, Donald B., to Brown & Williamson Tobacco Corporation. Production of smoking articles. 3,880,171, Cl. 131-84.00C.

Needham, Donald G., to Phillips Petroleum Company. Stabilized polyolefin compositions. 3,880,805, Cl. 260-45.95F.

Neish, Arthur C., deceased: *See—*
Chen, Lawrence C. M.; Craigie, James S.; McCandless, Esther L.; McLachlan, Jack L.; Neish, Arthur C., deceased; Shacklock, Peter F.; and Walter, John A., 3,879,890.

Neish, Dorothy A., executrix: *See—*
Chen, Lawrence C. M.; Craigie, James S.; McCandless, Esther L.; McLachlan, Jack L.; Neish, Arthur C., deceased; Shacklock, Peter F.; and Walter, John A., 3,879,890.

Nelson, Arthur L., to Townsend and Townsend. Molding apparatus for splicing electrical cable. 3,880,557, Cl. 425-108.000.

Nelson, Norman W.; and Hayes, Donald A., to Exxon Research and Engineering Company. Large volume tanks. 3,880,315, Cl. 220-5.00A.

Neville, Richard Ernest Gartside, to AMF Incorporated. Spiral moisture equaliser and method of using same. 3,879,857, Cl. 34-10.000.

New Charm Co., Ltd.: *See—*
Hosokawa, Hiroshi, 3,880,175.

New England Mica Company: *See—*
Towne, Allen N.; and Bombicino, Thomas A., 3,880,972.

Nicholls, Lawrence George, to Girling Limited. Suspension units. 3,880,412, Cl. 267-67.000.

Nicosia, Joseph T., to Gunmaster Industries Corporation. Tip unit for an electric soldering gun. 3,881,087, Cl. 219-233.000.

Nidy, Eldon G.: *See—*
Kornis, Gabriel; and Nidy, Eldon G., 3,880,645.

Nielsen, Donald R., to PPG Industries, Inc. Diperisophthalic acids. 3,880,914, Cl. 260-502.00R.

Niemann, Gert: *See—*
Britz, Helmut; Maltz, Georg; Niemann, Gert; and Verdenhalven, Gerd, 3,881,052.

Nihon Denshi Kabushiki Kaisha: *See—*
Murayama, Teruo; Irizuki, Mamoru; Morishita, Yuichi; Utsumi, Isamu; Murakami, Kanae; and Matsushita, Hiroichi, 3,880,586.

Nihon Jescoal Industry Co., Ltd.: *See—*
Aoyama, Mitsugu, 3,880,623.

Niimura, Isao: *See—*
Maeda, Shigeo; Ozutsumi, Minoru; Niimura, Isao; and Okazaki, Hideo, 3,880,797.

Nikishov, Oleg Alexandrovich: *See—*
Glazunov, Sergei Georgievich; Solonina, Olga Petrovna; Ulyakova, Nina Mikhailovna; Kuraeva, Vera Platonovna; Lyapicheva, Nadezhda Fedorovna; and Nikishov, Oleg Alexandrovich, 3,880,655.

Nikolov, Ivan Dimov: *See—*
Balevski, Anguel Tonchev; and Nikolov, Ivan Dimov, 3,880,221.

Nilsson, Kenth Ake Sune; and Larsson, Erik Olof Roland, to Siemens-Elema AB. Pressure receiver. 3,880,151, Cl. 128-2.05E.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Adachi, Takeshi; and Nakada, Akira, 3,881,057.

Nippon Kokan Kabushiki Kaisha: *See—*
Kanai, Senshu; Kamimura, Haruo; and Numano, Masachika, 3,879,972.

Nippon Oil Company, Limited: *See—*
Sato, Hisatake, 3,880,820.

Nippon Piston Ring Co., Ltd.: *See—*
Sugahara, Eisuke, 3,880,266.

Nippon Seiko Kabushiki Kaisha: *See—*
Kato, Hirosi, 3,879,897.

Nippon Telegraph and Telephone Public Corporation: *See—*
Izawa, Tatsuo, 3,880,630.

Nippon Tsu Shin Kogyo, K.K.: *See—*
Ichikawa, Mihikiro; Gotoh, Kazuyuki; and Kerman, Stephen E., 3,881,069.

Nippon Zeon Co., Ltd.: *See—*
Iida, Eiichi; and Sano, Toshio, 3,880,794.

Nirto Nobel AB: *See—*
Davegardh, Carl August Ragnar; and Wetterholm, Gustav Allan, 3,880,941.

Nishimoto, Kanichi, to Noritsu Koki Co., Ltd. Automatic adhesive tape feeding device. 3,880,699, Cl. 156-505.000.

Nishizawa, Jun-Ichi; Suto, Ken; and Okuno, Yasuo, to Zaidan Hojin Handotai Kenkyu Shinkokai. Method for producing a single crystal of $In_xGa_{1-x}P$. 3,880,677, Cl. 156-624.000.

Nissan Motor Company, Limited: *See—*
Hosaka, Akio; and Wazawa, Kiyoshi, 3,881,170.

Niven, Ronald D., to Dynagraphic Merchandising Corporation. Universal pegboard. 3,880,390, Cl. 248-223.000.

Nohe, Heinz: *See—*
Habermann, Wolfgang; Nohe, Heinz; and Jaeger, Peter, 3,880,728.

Nohmura, Ryotaro. Device for health promotion. 3,880,152, Cl. 128-33.000.

Nohtomi, Ryohta; Shigeyoshi, Tuyoshi; and Sugiyama, Masayoshi, to Kohjin Co., Ltd. Process for biaxially producing oriented tubular polyethylene terephthalate films by simultaneous stretching. 3,880,974, Cl. 264-95.000.

Noller, Harry F.: *See—*
Travis, Charles H.; Noller, Harry F.; and Beers, Eugene W., 3,880,270.

Nolte, Albert C., Jr.: *See—*
Slavin, James A., 3,880,214.

Nolting, Karl-Heinz: *See—*
Humpert, Jurgen Bruno; and Nolting, Karl-Heinz, 3,880,183.

Noranda Mines Limited: *See—*
Gervais, Edouard; and Chollet, Pierre, 3,880,679.

Noritsu Koki Co., Ltd.: *See—*
Nishimoto, Kanichi, 3,880,699.

Normac, Inc.: *See—*
Klein, Max, 3,880,771.

Northern Electric Company, Limited: *See—*
Kuhfus, Gerd, 3,880,253.
Willis, Wesley Nelson; and Laing, Graham Sterling, 3,881,071.

Northrop Corporation: *See—*
Cox, William Ervin; and Ferry, Lloyd R., 3,880,043.

Norton, Richard V. Conversion of ester groups to hydrocarbon. 3,880,905, Cl. 260-465.00B.

Norwood, Earl B.: *See—*
De Feo, Angelo; Kulina, Mark R.; and Norwood, Earl B., 3,880,479.

Novy, Anton R., to Great Lakes Carbon Corporation. Apparatus for decoking a delayed coker. 3,880,359, Cl. 239-565.000.

Numano, Masachika: *See—*
Kanai, Senshu; Kamimura, Haruo; and Numano, Masachika, 3,879,972.

Numata, Kei-ichi: *See—*
Kawaguchi, Hiroshi; Tsukiura, Hiroshi; Fujisawa, Kei-ichi; and Numata, Kei-ichi, 3,880,994.

Nutron Corporation: *See—*
Denker, James M., 3,880,052.

Oakley, Roy C., Jr.; and Czech, James I., to Whirlpool Corporation. Hose retractor for an appliance. 3,880,188, Cl. 137-577.000.

Obtresal, Robert: *See—*
Kralowetz, Bruno; and Obtresal, Robert, 3,880,025.

Ochiai, Masayasu: *See—*
Mizuhara, Yasushi; Kikumoto, Takashi; Abe, Tsuwao; Hitomi, Hiroyuki; Ochiai, Masayasu; and Itoh, Tuguaki, 3,881,148.

Oda, Atsushi: *See—*
Unoura, Kinya; Oda, Atsushi; Hayashi, Yoshimasa; Kimura, Nobuhiro; Nakata, Tetsuya; and Tokuda, Shingo, 3,880,779.

Odsather, Richard L.: *See—*
Burt, Glenn R.; and Odsather, Richard L., 3,880,538.

Ody, Francois: *See—*
Champel, Gerard; and Ody, Francois, 3,879,965.

Oediger, Hermann; and Braden, Rudolf, to Bayer Aktiengesellschaft. Process for the production of alpha-amino-2-hydroxy-phenylacetic acids. 3,880,919, Cl. 260-519.000.

Off, Joseph W. A.; and Wilbanks, Darrel J., to Hagger Company. Method of and apparatus for making bonded belt loops. 3,880,697, Cl. 156-467.000.

Offshore Company, The: *See—*
Bryant, Frank Allan, 3,880,105.

Offshore Technology Corporation: *See—*
Biewer, Frank N., 3,880,102.

Ogawa, Tomoyuki: *See—*
Arai, Osamu; Kikuchi, Kaoru; and Ogawa, Tomoyuki, 3,879,979.

Ogawa, Yasunao; and Yonetani, Ukio, to Shionogi & Co., Ltd. Test strip for ketone bodies. 3,880,590, Cl. 23-253.0TP.

Ogden, Keith: *See—*
Deem, William Roy; and Ogden, Keith, 3,880,798.

O'Hare, Harry M., to American Indian Development Corporation. Portable cleansing dispenser. 3,880,532, Cl. 401-292.000.

O'Hare, John: *See—*
Pasquale, Robert H.; and O'Hare, John, 3,881,082.

Ohba, Koushin: *See—*
Ono, Kenji; Ohba, Koushin; and Hioka, Tatuo, 3,881,195.

Ohchi, Kazuo: *See—*
Yoshizawa, Toshio; Yamada, Yasuo; Taniguchi, Toshinori; Kose, Tatsuo; Ohchi, Kazuo; and Hori, Kiyokazu, 3,879,925.

Okada, Tsutomu: *See—*
Ishida, Nakao; Okada, Tsutomu; and Kamata, Akira, 3,880,858.

Okada, Yoshihiro: *See—*
Mima, Hiroyuki; Matsuzawa, Tai; Aoki, Katsuo; Hirai, Shin-Ichiro; Ikenaga, Toshiaki; and Okada, Yoshihiro, 3,881,012.

Okamoto, Kazuo: *See—*
Sugiura, Fumio; and Okamoto, Kazuo, 3,880,380.

Okazaki, Hideo: *See—*
Maeda, Shigeo; Ozutsumi, Minoru; Niimura, Isao; and Okazaki, Hideo, 3,880,797.

O'Keefe, Stanley James. Mitre, marker and set-back tool for doorway trim. 3,879,853, Cl. 33-189.000.

O'Keefe, Walter C.: *See—*
Wasserman, Saul; Salzman, Robert S.; and O'Keefe, Walter C., 3,880,083.

OKI Electric Industry Co., Ltd.: *See—*
Kobayashi, Goro; and Murata, Noboru, 3,880,526.

Okumura, Shinji: *See—*
Kageyama, Katsusuke; Maeyashiki, Isamu; Kubota, Koji; Konishi, Shinpachi; and Okumura, Shinji, 3,880,741.

Okunev, Alexei Pavlovic: *See—*
Salihbegovic, Adnan; Matic, Bozidar; Zimonjic, Svetozar; Hadziomerovic, Faruk; Shubladze, Alexandr Michailovich; Okunev, Alexei Pavlovic; Yemeljanov, Stanislav Vasilyevich; and Kostyleva, Nataly Yevgenyevna, 3,880,348.

Okuno, Hisao: *See—*
Mizukoshi, Kanji; Andou, Minoru; and Okuno, Hisao, 3,879,837.

Okuno, Yasuo: *See—*
Nishizawa, Jun-Ichi; Suto, Ken; and Okuno, Yasuo, 3,880,677.

Olenzak, Albert T.: *See—*
Mills, Ivor W.; Kirk, Merritt C., Jr.; and Olenzak, Albert T., 3,880,747.

Olin Corporation: *See—*
Ridenour, Williard L.; and McAree, Robert D., 3,880,780.
Shapiro, Stanley; and Tyler, Derek E., 3,880,678.

Olinkraft, Inc.: *See—*
Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 3,880,341.

Oliver, Clifford Clinton. Surfboard with removable tail surface area portion. 3,879,782, Cl. 9-310.00E.

Olson, Harry M. Flag mounting structure. 3,879,907, Cl. 52-297.000.

Olympus Optical Co., Ltd.: *See—*
Kanehira, Katsuyuki; and Yamashita, Nobuo, 3,880,148.

Omron Tateisi Electronics Co.: *See—*
Iwatani, Katumi; Oota, Takao; and Tabaru, Yutaka, 3,880,350.

O'Neal, Cothburn M.; Mayo, Alfred M.; Childs, George William, deceased; and by Childs, Patricia M., executrix. Voting machine. 3,881,092, Cl. 235-54.00R.

Ono, Kenji; Ohba, Koushin; and Hioka, Tatuo, to Matsushita Electric Industrial Co., Ltd. Transducer cleaning unit. 3,881,195, Cl. 360-128.000.

Oota, Takao: *See—*
Iwatani, Katumi; Oota, Takao; and Tabaru, Yutaka, 3,880,350.

Ooya, Masaki; Suzuki, Masayasu; and Kobayashi, Akio, to Kureha Kagaku Kogyo Kabushiki Kaisha. Copolymer and graft blend each containing acrylonitrile and acrylate components. 3,880,951, Cl. 260-876.00R.

Opti-Holding AG: *See—*
Frohlich, Alfons, 3,880,203.

Optical Apparatus Co., Inc.: *See—*
Seifert, Richard L., 3,880,074.

Orchard, Henry J.; and Schmidt, Charles E., to GTE Automatic Electric Laboratories Incorporated. Multipurpose active filter network. 3,881,158, Cl. 330-84.000.

Ord, Thomas E. Combination container and material compacting apparatus. 3,880,072, Cl. 100-100.000.

Organon Teknika B.V.: *See—*
Van Assendelft, Leendert, 3,880,759.

Osaka Motor Co., Ltd.: *See—*
Iwatani, Katumi; Oota, Takao; and Tabaru, Yutaka, 3,880,350.

Osaka Soda Co., Ltd.: *See—*
Unoura, Kinya; Oda, Atsushi; Hayashi, Yoshimasa; Kimura, Nobuhiro; Nakata, Tetsuya; and Tokuda, Shingo, 3,880,779.

Osmonics, Inc.: *See—*
Thomas, Frank A.; and Spatz, Donald D. (said Spatz assors. to), 3,880,755.

Ostapchuk, Nikolai Petrovich: *See—*
Voronova, Natalya Alexandrovna; Shevchenko, Anatoly Filippovich; Lafer, Isaak Moiseevich; Dvoskin, Boris Vulfovich; Lavrentiev, Moris Leonidovich; Ostapchuk, Nikolai Petrovich; Kostitsyn, Evgeny Alexandrovich; and Emelyanov, Ivan Yakovlevich, 3,880,411.

Ostergren, Jarl Olle Borje; and Reisinger, Kurt Hans. Stabilization of metal carbonyls. 3,880,612, Cl. 44-51.000.

Osterreichisch-Amerkianische Magnesit Aktiengesellschaft: *See—*
Eigner, Erich, 3,880,365.

Osterwalder, Johann M., to General Dynamics Corporation. Pulse generating circuit. 3,881,120, Cl. 307-260.000.

Oswald, Alexis A.; Ryer, Jack; and Mohan, Raam R. Higher alkyl trimethyl ammonium salt liquid hydrocarbon compositions. 3,880,613, Cl. 44-62.000.

Oswald, Alexis A., to Exxon Research and Engineering Company. Preparation of thiol adducts of S-propenyl dihydro-carbyl dithiophosphates. 3,880,735, Cl. 204-158.00R.

Oswald, Brian James: *See—*
Bennett, Robert Neil; Oswald, Brian James; and Thurlow, Terence Norman, 3,880,746.

Ott, Karl-Heinz: *See—*
Serini, Volker; Humme, Gert; Ott, Karl-Heinz; Cohnen, Wolfgang; and Vernaleken, Hugo, 3,880,783.

Overseas Containers Limited: *See—*
Wilson, Joseph Howard; and Heighton, Arthur Victor, 3,879,957.

Owens, Carl D.: *See—*
Grabb, Frederick G.; Owens, Carl D.; Cripe, Maxwell L.; and Pulaski, Daniel C., 3,880,049.

Owens-Illinois, Inc.: *See—*
Bodner, John J.; Grubb, Everett F.; McCormack, Kenneth J.; and Moore, Ronald H., 3,880,639.
Butler, Richard L.; and Juvinall, John W., 3,880,750.
Jenkins, Charles W., 3,880,640.
Sorbie, Thomas B., 3,879,993.

Oya, Minoru: *See—*
Miyao, Takayuki; Oya, Minoru; Yamada, Masatoshi; Kuno, Toshitaka; Yamaguchi, Masao; Katagiri, Haruo; Hattori, Katsuhiko; Sato, Masanori; and Toyota Jidosha Kogyo Kabushiki Kaisha, 3,880,017.

Ozutsumi, Minoru: *See—*
Maeda, Shigeo; Ozutsumi, Minoru; Niimura, Isao; and Okazaki, Hideo, 3,880,797.

P. R. Mallory & Co., Inc.: *See—*
Haarbye, Fredrick O., 3,880,608.

Pahoundis, James T. E.; Williams, Maurice A.; and Strop, Hans R., to International Basic Economy Corporation. Extruded ruminant fodder comprising fibrous plant material and gelatinizable binder. 3,881,024, Cl. 426-578.000.

Palad, Michaelangelo A.: *See—*
Garingarao, Renato M.; and Palad, Michaelangelo A., 3,880,981.

Pamer, Karl A., to McNeil Corporation. Material handling apparatus. 3,880,087, Cl. 104-123.000.

Panissidi, Hugo A., to International Business Machines Corporation. Hydraulic logic circuit with controlled delay. 3,880,178, Cl. 137-14.000.

Pannenbecker, Heinrich; and Plate, Rudolf. Process for producing film and sheet materials from thermoplastic materials having hot tack by the blown film process and the film and sheet materials thereby obtained. 3,880,691, Cl. 156-244.000.

Pantanelli, Georges Pierre, to Bell Telephone Laboratories, Incorporated. Controlling shrinkage caused by sintering of high alumina ceramic materials. 3,880,971, Cl. 264-56.000.

Panzer, Hans Peter; and McAdams, Louis Vincent, to American Cyanamid Company. Flocculation of suspended solids in aqueous medium by action of cyclo-1,1-diallylgrianidine polymer. 3,880,753, Cl. 210-54.000.

Papadopulos, Stephan C. Machine tool for machining a circular surface of a work piece. 3,880,544, Cl. 408-111.000.

Parker, David E.; and Smith, Henry G., Jr., to United States of America, Navy. Cable mounted magnetostrictive line hydrophone. 3,881,165, Cl. 340-3.00T.

Parker, Kenneth O., to Garrett Corporation, The. Multi-material heat exchanger construction. 3,880,232, Cl. 165-166.000.

Parkhill, Laverne O.: *See—*
Bonaddio, Robert M.; and Parkhill, Laverne O., 3,880,029.

Parkinson, Graham Charles: *See—*
Fordyce, Homer E.; and Parkinson, Graham Charles, 3,880,964.

Parks-Cramer Company: *See—*
Lee, Charles D., Jr.; and Henderlite, James H., III, 3,880,201.

Pascual, Antonio Blasi. Method and apparatus for making a novel fabric. 3,879,964, Cl. 66-87.000.

Pasquale, Robert H.; and O'Hare, John, to Gillette Company, The. Assembly apparatus. 3,881,082, Cl. 219-79.000.

Passons, William Erby. Looper apparatus for tufting uniform cut pile. 3,880,101, Cl. 112-79.00R.

Patlach, Alvin Murray: *See—*
Koepcke, Richard Wayne; and Patlach, Alvin Murray, 3,881,184.

Patrick, Robert D.: *See—*
Davidyan, G. Kurt; Kraus, Richard W.; Patrick, Robert D.; and Scott, Leo R., 3,880,496.

Patterson, Robert W., to United States Steel Corporation. Method for removing excess coating material from strip edges. 3,881,040, Cl. 427-349.000.

Pattison, Victor A., to Hooker Chemicals & Plastics Corporation. Process for fiber treatment. 3,880,707, Cl. 162-167.000.

Pattison, Victor A., to Hooker Chemicals & Plastics Corporation. Process for fiber treatment. 3,880,708, Cl. 162-167.000.

Pattison, Victor A., to Hooker Chemicals & Plastics Corporation. Process for fiber treatment. 3,880,709, Cl. 162-167.000.

Pattison, Victor A., to Hooker Chemicals & Plastics Corporation. Process for fiber treatment. 3,880,710, Cl. 162-167.000.

Paul Dosier Associates, Inc.: *See—*
Dosier, Paul A., 3,880,047.

Paul Forkardt Kommanditgesellschaft: *See—*
Scharfen, Hans, 3,880,437.

Paul, Jurgen, to Daimler-Benz Aktiengesellschaft. Pulse transmitter especially for brake slippage control installations in motor vehicles. 3,881,123, Cl. 310-168.000.

Payton, Donald R.: *See*—
Flaherty, Danny F.; and Payton, Donald R., 3,880,283.

Peabody ABC Corporation: *See*—
Arnold, Orlan M.; and Vancini, Carlo A., 3,880,624.

Peck, Glenn L., Jr.: *See*—
Latka, Thomas L.; and Peck, Glenn L., Jr., 3,881,076.

Pederson, Kenneth C.; Jobe, Marshall W.; and Stanhope, Terry R., to Texas Instruments Incorporated. Correlator method and system for identifying sequences of pulses. 3,881,101, Cl. 235-181.000.

Peel, Richard E., to Ford Motor Company. Seat belt retractor mechanism. 3,880,381, Cl. 242-107.400.

Peille, Jean-Marie Raymond, to Societe Industrielle de Stratifies. System for the continuous manufacture of panels of synthetic material. 3,880,559, Cl. 425-115.000.

Pelet, Pierre A., to Dymo Industries, Inc. Hand-held label marking device. 3,880,078, Cl. 101-273.000.

Peloubet, Elmore M.: *See*—
Kennard, Harry M.; Handzel, James R.; and Peloubet, Elmore M., 3,880,326.

Pelton, Charles R.; Mitchell, Kim L.; and Gauger, David H., to Pelton Company, Inc. Method and apparatus to maintain constant phase between reference and output signals. 3,881,167, Cl. 340-15.5TC.

Pelton Company, Inc.: *See*—
Pelton, Charles R.; Mitchell, Kim L.; and Gauger, David H., 3,881,167.

Pemsler, J. Paul, to Kennecott Copper Corporation. Recovery of copper from chalcopyrite. 3,880,650, Cl. 75-72.000.

Peng, Stephen C.; and Wilemski, Denis E., to Ford Motor Company. Method of preparing homogeneous thermosetting powder paint composition. 3,880,360, Cl. 241-3.000.

Pennace, John R.: *See*—
Bannister, William W.; Pennace, John R.; and Curby, William A., 3,880,569.

Pennock, Johannes Hermanus Jacobus, to Van Doorne's Aanhangwagenfabriek NV. Self-supporting coach work or cabin. 3,880,460, Cl. 296-29.000.

Penny, Robert Noel. Rotary regenerative heat exchanger. 3,880,225, Cl. 165-9.000.

Pennzoil Company: *See*—
Sardisco, John B., 3,880,732.

Pepi, Jerome S.: *See*—
Markowski, Edwin P.; and Pepi, Jerome S., 3,880,041.

Perfect Thread Company, Inc.: *See*—
Usdan, Marvin, 3,879,928.

Perkins, Garry R., to Spotnails, Inc. Dispensing tool and cartridge for viscous materials. 3,880,331, Cl. 222-327.000.

Perrine, Walter E. Hand-conditioning apparatus. 3,880,153, Cl. 128-52.000.

Perrotti, Emilio; and Maspero, Federico. Modified polymer compounds and process for the preparation thereof. 3,880,822, Cl. 260-94.70N.

Persson, Holger A.: *See*—
Gustavsson, Karl-Axel G.; and Persson, Holger A., 3,880,628.

Pesaro, Mario: *See*—
Bozzato, Giuliano; Pesaro, Mario; Schudel, Peter; Hug-Inderbitzin, Marianne; and Erickson, Robert Edward, 3,880,931.

Peschel, Heinz, to Eastman Kodak Company. Single frame mechanism for a motion picture camera. 3,880,505, Cl. 352-169.000.

Pessolano, Richard L.; and Rhodes, Robin B., to Isothermics Incorporated. Heat transfer system. 3,880,230, Cl. 165-105.000.

Pestka, John A., to Illinois Tool Works Inc. Spring drag device for pop-up toaster. 3,880,063, Cl. 99-329.00R.

Peters, Randall W.: *See*—
Megahed, El Sayed; and Peters, Randall W., 3,880,672.

Petersen, Lawrence Christof; and Jerrick, Bruce Michael, to Tektronix, Inc. Light probe. 3,880,528, Cl. 356-225.000.

Peterson, Robert H., to Kenway Engineering, Incorporated. Bin address memory system. 3,880,307, Cl. 214-152.000.

Petit, George S.: *See*—
Wright, Ralph R.; Wright, Calvin C.; and Petit, George S., 3,880,730.

Petrolite Corporation: *See*—
McLaren, Robin A.; Alcott, Charles A.; and Nasser, William E., 3,880,790.
Redmore, Derek, 3,880,584.

Petrus, Stephen, to Eaton Corporation. Hub construction. 3,880,536, Cl. 403-361.000.

Pfiffner, Albert: *See*—
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, 3,880,935.

Phelps, David Allen: *See*—
Standley, Wendell Evert; Adams, Norman David; and Phelps, David Allen, 3,880,695.

Philibert, Robert A.; and Polimine, Robert F., to General Signal Corporation. Process for sealing cable at fittings. 3,880,453, Cl. 285-161.000.

Philip Morris Incorporated: *See*—
Braginetz, Paul A., 3,880,321.

Phillipps, Gordon Hanley; and Lawrence, Robin. Chemical compounds. 3,880,896, Cl. 260-397.450.

Phillips Petroleum Company: *See*—
Box, E. O., Jr.; and Uhrick, David A., 3,880,776.
Drake, Charles A., 3,880,928.
Drake, Charles A., 3,880,929.
Gilbert, Dixie E., 3,880,312.
Hsieh, Henry L.; and Buck, Ollie G., 3,880,955.
Kahle, Gerald R.; Kitchen, Alonzo G.; and Uraneck, Carl A., 3,880,954.
Kubicek, Donald H., 3,880,933.
Moberly, Charles W., 3,880,815.
Needham, Donald G., 3,880,805.

Piber, Earl T., to Cutler-Hammer, Inc. Refrigerator-freezer, two-door operated switch. 3,881,077, Cl. 200-61.690.

Pietsch, Ervin I., to ACF Industries, Incorporated. Pressure indicator for railway cars. 3,880,010, Cl. 73-406.000.

Pietsch, Hanns Georg: *See*—
Guse, Gunter; and Pietsch, Hanns Georg, 3,880,813.

Piiroya, Eduard Karlovich; Pyldsaar, Mati Endel-Agustovich; and Viikna, Anti Khelkurovich. Stencil-print colour. 3,880,785, Cl. 260-22.00S.

Pike, John E.; and Schneider, William P., to Upjohn Company, The. Composition and process. 3,880,912, Cl. 260-488.00R.

Pinczuk, Leon: *See*—
Horowitz, Carl; Pinczuk, Leon; and Dichter, Michael, 3,880,580.

Pioneer Electronic Corporation: *See*—
Ando, Shizuo, 3,881,061.

Piskunov, Jury Nikolaevich: *See*—
Troshenkin, Boris Alexandrovich; Solovieva, Galina Ilinichna; Piskunov, Jury Nikolaevich; Ponomarenko, Viktor Germanovich; and Koval, Ivan Mikhailovich, 3,880,702.

Pittsburgh Corning Corporation: *See*—
DeVos, Daniel A., 3,880,563.

Plate, Rudolf: *See*—
Pannenbecker, Heinrich; and Plate, Rudolf, 3,880,691.

Platt, John G.; and Isaacs, Robert O., to Flex-O-Lators, Inc. Spring base for upholstered seating. 3,880,413, Cl. 267-80.000.

Platt Luggage, Inc.: *See*—
March, Joseph E., 3,880,285.

Plempel, Manfred: *See*—
Boshagen, Horst; and Plempel, Manfred, 3,880,847.
Regel, Erik K.; Buchel, Karl-Heinz; and Plempel, Manfred, 3,881,014.

Plescia, Ronald Earl, to Quantor Corporation. Microfiche holder. 3,879,872, Cl. 40-104.030.

Plotnikov, Valerian Valerievich: *See*—
Privalov, Petr Leonidovich; and Plotnikov, Valerian Valerievich, 3,879,983.

Pocker, Erwin; and Grundmann, Gert, to Messerschmitt-Blokow-Blohm GmbH. Device for producing electrical signals by means of a control stick. 3,881,106, Cl. 250-234.000.

Podgornova, Valeria Alexandrovna: *See*--
Rusakova, Marina Savvatievna; Podgornova, Valeria Alexandrovna; Kreitsberg, Vitaly Nikolaevich; Ustavschikov, Boris Fedorovich; Farberov, Mark Iosifovich; Turyan, Yakov Iosifovich; and Shvyrkov, Evgeny Pavlovich, 3,880,731.

Poduje, Noel, to Stow Laboratories, Inc. Electronic temperature sensing system. 3,880,006, Cl. 73-362.0AR.

Podvigalkina, Galina Yakovlevna. Method of joining optical glass parts. 3,880,532, Cl. 65-37.000.

Pol, Lucien, to Societe Provencale de Fabrications Medico-Chirurgicales S.P.O.M.C. Hospital bed. 3,879,772, Cl. 5-68.000.

Polaroid Corporation: *See*—
Cook, Gerald H., 3,880,373.

Polimine, Robert F.: *See*—
Philibert, Robert A.; and Polimine, Robert F., 3,880,453.

Polymer Research Corporation of America: *See*—
Horowitz, Carl; Pinczuk, Leon; and Dichter, Michael, 3,880,580.

Polysar Limited: *See*—
Feniak, George, 3,880,821.

Pomfret, Edward E., to Gillette Company, The. Blade unit retaining casings and storage tray. 3,880,284, Cl. 206-354.000.

Ponomarenko, Viktor Germanovich: *See*—
Troshenkin, Boris Alexandrovich; Solovieva, Galina Ilinichna; Piskunov, Jury Nikolaevich; Ponomarenko, Viktor Germanovich; and Koval, Ivan Mikhailovich, 3,880,702.

Popov, Karamfil Vladimirov, to Treta Gradska Bolnitza. Method for medical treatment of joints, muscles, the nervous system and others. 3,880,170, Cl. 128-421.000.

Portland Memorial Inc.: *See*—
Bondi, Herman H., 3,879,852.

Post, Donald S.; Helbig, Gerald R.; and Fiske, Kenton W., to Xerox Corporation. Diagnostic circuit board. 3,880,516, Cl. 355-14.000.

Potemski, Robert Martin: *See*—
Grandia, Johannes; Potemski, Robert Martin; and Woodall, Jerry McPherson, 3,881,037.

Potter, Robert I.; and Warner, Michael W., to International Business Machines Corporation. Three-gap magnetic recording head having a single flux sensing means. 3,881,191, Cl. 360-121.000.

Powers, Joseph E., to Kaiser Steel Corporation. Method for making nailable steel floor planking for freight vehicles. 3,879,826, Cl. 29-155.00R.

PPG Industries, Inc.: *See*—
Bonaddio, Robert M.; and Parkhill, Laverne O., 3,880,029.
Christenson, Roger M.; Sullivan, Thomas R.; Das, Suryya K.; and Dowbenko, Rostyslaw, 3,880,796.
Frederick, Walter, Jr., 3,880,028.
Mc Connell, William C.; and Rahn, Henry W., 3,880,646.
Nielsen, Donald R., 3,880,914.
Rieser, Raymond G.; and Chabal, Joseph, 3,881,043.

Tobin, Melvin W.; and Reese, Thomas J., 3,880,636.
Prajsnar, Tadeusz: *See—*
Godyn, Adam; Prajsnar, Tadeusz; Rulinski, Jozef; Sikora, Leopold; Wusatowski, Roman; and Zglobicki, Edward, 3,879,973.
Preformed Line Products Company: *See—*
Williams, Harrison L., 3,879,780.
Premo, John G., to Nalco Chemical Company. Method of treating water contained in gasoline storage tanks. 3,880,752, Cl. 210-54.000.
Prete, Ernest, Jr.; and Knox, Howard Thomas, to Ancra Corporation. Pocketed spring buckle improvements. 3,879,810, Cl. 24-194.000.
Prillig, Elliott B.; Gardella, Libero A.; and Knuth, Albert R., to Arnar-Stone Laboratories, Inc. Particle coating apparatus. 3,880,116, Cl. 118-303.000.
Principe, Rene; and Hugentobler, Jakob, to A. Sutter AG. Suction cleaner. 3,879,797, Cl. 15-334.000.
Privalov, Petr Leonidovich; and Plotnikov, Valerian Valerievich. Differential scanning calorimeter for thermal analysis of liquids. 3,879,983, Cl. 73-15.00B.
Prizzia, Rose. Disposable diaper with T-shirt holding means. 3,880,165, Cl. 128-284.000.
Process Computer Systems, Inc.: *See—*
Barnich, Richard G., 3,881,174.
Proebsting, Robert J.; and McKenny, Vernon George, to Mostek Company. Dynamic random access memory including circuit means to prevent data loss caused by bipolar injection resulting from capacitive coupling. 3,881,121, Cl. 307-303.000.
Pulaski, Daniel C.: *See—*
Grabb, Frederick G.; Owens, Carl D.; Cripe, Maxwell L.; and Pulaski, Daniel C., 3,880,049.
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Glassmeyer, John J., 3,880,403.
Pusch, Gunter: *See—*
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Puskas, Imre: *See—*
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Pyldsaar, Mati Endel-Agustovich: *See—*
Piiroya, Eduard Karlovich; Pyldsaar, Mati Endel-Agustovich; and Viikna, Anti Kheldurovich, 3,880,785.
Pynn, Leander G. Fuel line lock for a motor vehicle. 3,879,969, Cl. 70-242.000.
Q.M. Machine Works Ltd.: *See—*
Anderson, Donald E.; Yorston, James K.; and McLauchlan, Thomas A., 3,880,216.
Quantor Corporation: *See—*
Plescia, Ronald Earl, 3,879,872.
Queffeulou, Jean-Yves. Device for aligning data envelope formats to PCM word formats. 3,881,065, Cl. 179-15.0BS.
Queneau, Paul Etienne; Roorda, Herm Jan; and Townshend, Stanley Charles. Chlorine leaching of non-ferrous metal values with ammoniacal solutions. 3,880,651, Cl. 75-82.000.
Qume Corporation: *See—*
Jamieson, John W.; and Weller, Ronald G., 3,880,016.
R. A. Jones and Company Incorporated: *See—*
Jeffries, Dale, 3,880,692.
R. R. Donnelley & Sons Company: *See—*
Swanson, Kermit E., 3,880,418.
Swanson, Kermit E., 3,880,419.
Rabe, George B., to Thiokol Chemical Corporation. Frangible seal for fluid dispensing device. 3,880,325, Cl. 222-95.000.
Rahn, Henry W.: *See—*
Mc Connell, William C.; and Rahn, Henry W., 3,880,646.
Raichel, Michael Baruch, to Ashray Samig, Inc. Bagel forming apparatus. 3,880,567, Cl. 425-364.00B.
Raineri, Carlo J.; Mandy, Zoltan P.; Lesczynski, Michael; Styron, James S.; and Akerhielm, George, to Carrier Corporation. Metaod and apparatus for concentrating sludge. 3,880,756, Cl. 210-97.000.
Rakestraw, Thomas L.: *See—*
Augustin, Eugene H.; Johnson, Roger E.; and Rakestraw, Thomas L., 3,880,337.
Ralph M. Parsons Company, The: *See—*
Beavon, David K., 3,880,986.
Rambosek, George M., to Minnesota Mining and Manufacturing Company. Fluorochemical foam stabilizer and foamed isocyanate-derived polymers made therewith. 3,880,782, Cl. 260-2.5AG.
Ramm, Klaus; Thielecke, Wilfried; Zander, Maximilian; Collin, Gerd; and Ruhl, Karl, to Rutgerswerke Aktiengesellschaft. Process for the production of 1-[cyclohexene-(1-YL])-cyclohexanone-(2) by condensation of cyclohexanone. 3,880,930, Cl. 260-586.00C.
Rammler, David H., to Syntex (U.S.A.) Inc. Nitrophenyloxybutanediols. 3,880,934, Cl. 260-613.00D.
Ramsay, Joseph D., to Campbell Soup Company. Apparatus for determining vacuum in closed cans. 3,880,749, Cl. 209-80.000.
Randolph, Arthur J.; and Horsting, Albertus G. Poultry inseminator. 3,880,122, Cl. 119-97.00R.
Randolph, Arthur J.; and Horsting, Albertus G. Straw charging and feeding apparatus. 3,880,210, Cl. 141-175.000.
Rank Organisation Limited, The: *See—*
Thomas, Alan John, 3,880,523.
Rankin, Peter M.: *See—*
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Rao, Ganta V.; and Gerrish, Oliver B., Sr., to Far-Mar-Co., Inc. Gluten lipid complexes and process for preparing same. 3,880,824, Cl. 260-112.00G.
Rapistan, Incorporated: *See—*
Habegger, James D.; and Huttula, Andrew B., 3,880,298.
Zollinger, Howard A.; Lubbers, Leroy; and Stubbs, William K., 3,880,299.
Rasch, Arthur A., to Eastman Kodak Company. Conducting layer for organic photoconductive element. 3,880,657, Cl. 96-1.500.
Rashid, Amir A.; and Dodge, Gerald F., III, to General Electric Company. Hinge assembly for a refrigerator door. 3,879,801, Cl. 16-130.000.
Rask, Oscar J. Fish lure. 3,879,882, Cl. 43-42.280.
Raskin, Gottfried: *See—*
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Rasmussen, John E.: *See—*
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Ratzlaff, Alvin E.: *See—*
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Raymond Lee Organization, Inc., The: *See—*
Bailey, Ralph I., 3,879,880.
Bain, Glenn E., 3,879,869.
Blumenaus, Jon M., 3,880,429.
Emanuele, Emidio G., 3,880,250.
Exley, George A., 3,879,864.
Festa, Albert P., 3,880,109.
Kazanecki, Paul J., 3,881,078.
Sicina, Marion P., 3,880,484.
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Douglas, Edward Curtis; Wu, Chung Pao; and Mueller, Charles William, 3,880,676.
Haferl, Peter Eduard, 3,881,134.
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Van Raalte, John A.; and Christiano, Victor, 3,880,725.
Weisbecker, Joseph A., 3,881,183.
Redmore, Derek, to Petrolite Corporation. Use as corrosion inhibitors:acridine phosphoric compounds. 3,880,584, Cl. 21-2.50A.
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Reed, Ronald H.; Drilling, Joseph C.; and Jones, Lary D., to Square D Company. Socket base assembly. 3,880,494, Cl. 339-219.00R.
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Reese, Thomas J.: *See—*
Tobin, Melvin W.; and Reese, Thomas J., 3,880,636.
Regel, Erik K.; Buchel, Karl-Heinz; and Plempel, Manfred, to Bayer Aktiengesellschaft. N-tritylimidazoles for treating fungal infections. 3,881,014, Cl. 424-273.000.
Regie Nationale des Usines Renault: *See—*
Chatourel, Pierre R.; and Lingrand, Michel A., 3,880,222.
Rehm, Alfred; and Eggert, Winfried, to Hans Hoellmueller Maschinenbau. Process and apparatus for etching copper and copper alloys. 3,880,685, Cl. 156-19.000.
Rehm, Walter, to Hoffmann-La Roche Inc. Compositions containing 3-sulfanilamido-4,5-dimethylisoxazole and a trimethoxybenzyl pyrimidine. 3,881,003, Cl. 424-229.000.
Reilly, Joseph R., to Monsanto Company. Apparatus for handling workpieces. 3,880,301, Cl. 214-21.000.
Reinhold, Donald F., to Merck & Co., Inc. Process for preparing 3-fluoro-D-alanine by asymmetric rearrangement of 2-(azidocarbonyl)-3-fluoro-propionic ester or nitrile. 3,880,922, Cl. 260-534.00C.
Reiser, Lutz. Apparatus for continuously winding lengths of material. 3,880,374, Cl. 242-67.10R.
Reisinger, Kurt Hans: *See—*
Ostergren, Jarl Olle Borje; and Reisinger, Kurt Hans, 3,880,612.
Rekertas, Romualdes Vatslovovich; Sharmaitis, Romas Romovich; and Matulis, Juozas Juozovich. Composition for ring passivation. 3,880,772, Cl. 252-387.000.
Rellensmann, Wolfgang: *See—*
Bueb, Michael; Feltgen, Karlheinz; Muschelknautz, Edgar; and Rellensmann, Wolfgang, 3,879,927.
Remer, Robert K., to Hull-Smith Chemicals, Inc. Pigment composition. 3,880,566, Cl. 106-288.00Q.
Renaut, Henri, to Societe Anonyme dite: Etablissements P. Lamaire & Cie. Thermo-printing process. 3,880,579, Cl. 8-2.500.
Repetto, Silvio, to S.p.A. Luigi Rizzi & C. Installation for the defleshing of skins. 3,879,967, Cl. 69-42.000.
Resolution Engineering and Development Company: *See—*
Fitzgerald, Hugh Joseph, deceased; and Kwadas, Edward James, 3,880,254.
Rey, Hans-Georg: *See—*
Rittersdorf, Walter; Guthlein, Werner; Berger, Dieter; Rey, Hans-Georg; and Rieckmann, Peter, 3,880,588.
Reynolds, Gibson; and Doniger, Jerry, to Bendix Corporation, The. Flight control system hardover monitor with provisions for preventing nuisance alarms. 3,880,385, Cl. 244-77.00M.
Reynolds Metals Company: *See—*
Harris, Marvin E., Jr., 3,879,978.
Wilson, Calvin L., 3,881,023.

Rhodes, Jerry P.; and Bier, Kenneth C., to Colt Industries Operating Corporation. Method and apparatus for varying fuel flow to compensate for changes in barometric pressure and altitude. 3,880,962, Cl. 261-39.00A.
Rhodes, Jerry P.: *See—*
Bier, Kenneth C.; and Rhodes, Jerry P., 3,880,963.
Rhodes, Robin B.: *See—*
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Ribar, William J. Scissors sharpener. 3,879,899, Cl. 51-92.0BS.
Rich, Leonard G., to Gerber Scientific Instrument Company, The. Photoexposure system. 3,881,098, Cl. 235-151.000.
Richards, Joseph E. Fishline connector device. 3,879,981, Cl. 72-410.000.
Richards, Lawrence I., to Autoquip Corporation. Power apparatus for truck loading elevator. 3,880,259, Cl. 187-18.000.
Richards, Peter Henry: *See—*
Jack, Henry Ross Scarlett; and Richards, Peter Henry, 3,880,635.
Richardson, Donald M.; and Bamberger, Carlos E., to United States of America, Atomic Energy Commission. Solid sorbent for trapping iodine. 3,880,619, Cl. 55-71.000.
Richardson-Merrell Inc.: *See—*
Grisar, Johann Martin; and Blohm, Thomas R., 3,881,006.
Richter, Sidney B., to Velsicol Chemical Corporation. New compositions of matter. 3,880,926, Cl. 260-566.0AC.
Rickards, David William: *See—*
Collier, John Covell; and Rickards, David William, 3,880,488.
Ridenour, Williard L.; and McAree, Robert D., to Olin Corporation. High resilient polyurethane foam. 3,880,780, Cl. 260-2.5AM.
Rideout, Vincent Leo; and Woodall, Jerry Macpherson, to International Business Machines Corporation. Integrated optically coupled light emitter and sensor. 3,881,113, Cl. 250-551.000.
Ridler, Keith Douglas: *See—*
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Riechers, Daniel: *See—*
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Rieser, Raymond G.; and Chabal, Joseph, to PPG Industries, Inc. Laminated safety windshields. 3,881,043, Cl. 428-81.000.
Rietschle, Ernst: *See—*
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Riffin, Paul V.; and Kinas, Ernest N., to United States of America, Army. High boron alloy steel fragmentation munition. 3,880,081, Cl. 102-67.000.
Rigassi, Norbert: *See—*
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Rigney, David V.; and Schilke, Peter W., to United Aircraft Corporation. Nickle base high temperature abradable material. 3,879,831, Cl. 29-182.500.
Riha, Petr; Kovar, Stanislav; and Cernocky, Jiri, to Zbrojovka Vsetin, narodni podnik. Device for reinforcing the edge of a fabric. 3,880,199, Cl. 139-54.000.
Riley, Eugene D. Soil conditioner depositing apparatus. 3,879,888, Cl. 47-1.000.
Rinker, Clark I., deceased; and by Rinker, Juanita S., administratrix. Rotary engine apparatus. 3,879,938, Cl. 60-39.610.
Rinker, Juanita S., administratrix: *See—*
Rinker, Clark I., deceased; and Rinker, Juanita S., administratrix, 3,879,938.
Ripley, Donald M., to Corning Glass Works. Method of identifying chemically tempered ophthalmic lenses. 3,880,631, Cl. 65-30.000.
Risdon, Merle G., to Sterigard Corporation. Face sealing gassing valve for pressurized dispensers and method for installing it. 3,880,332, Cl. 222-394.000.
Ristow, Ulrich; and Schneider, Alfred, to Licentia Patent-Verwaltungs-G.m.b.H.; and Ingenieurburo Schneider & Sudhop. Apparatus for testing load bearing members. 3,879,991, Cl. 73-95.000.
Ritch, Avron; Holub, John Andrew; and Mattis, Frederick Arnold, to MacKenzie Trading Co. Ltd. Apparatus for applying handles to plastic bags. 3,880,700, Cl. 156-514.000.
Rittersdorf, Walter; Guthlein, Werner; Berger, Dieter; Rey, Hans-Georg; and Rieckmann, Peter, to Boehringer Mannheim G.m.b.H. Diagnostic agent for detecting bilirubin. 3,880,588, Cl. 23-253.0TP.
Ritterskamp, Jack H. Medicinal syringe actuating device. 3,880,163, Cl. 128-218.00F.
Rittmannsberger, Norbert: *See—*
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Rizza, Michael C.; and Brown, Delmont D., to D. S. Brown Company, The. Modular expansion joint. 3,880,540, Cl. 404-69.000.
Robbins, Albert L.: *See—*
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Roberts, Gordon A. Smoke and heat detector unit. 3,881,112, Cl. 250-565.000.
Roberts, Hobart V., Jr., to Trico Products Corporation. Windshield wiper blade assembly. 3,879,794, Cl. 15-250.420.
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Robertshaw Controls Company: *See—*
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Robinson, Jerrold, to Dimension Weld International Corporation, The. Simulated painting with brush or palette-knife strokes, and method of making the same. 3,880,686, Cl. 156-59.000.
Robinson, Joel P.: *See—*
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Rockefeller, Winston G., to Colgate-Palmolive Company. Partition structure for cartons. 3,880,343, Cl. 229-28.00R.
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Miller, Norman C., 3,879,838.
Saunders, Richard C., 3 880,674.
Rodermund, Gerd; and Kappus, Helmut, to said Rodermund, by said Kappus. Machine for manufacturing tinsel. 3,880,031, Cl. 83-81.000.
Rodermund, Gerd: *See—*
Rodermund, Gerd; and Kappus, Helmut (assors. to said Rodermund, by said Kappus), 3,880,031.
Roesel, Thomas L.; and Buehrle, Russell L., to SCM Corporation. Paste-liquid dispenser with removable puncture rod. 3,880,324, Cl. 222-82.000.
Rogers, Thelmer A. Sweep attachment. 3,880,242, Cl. 172-740.000.
Rogler, Walter: *See—*
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Rohr, Wolfgang; Koenig, Karl-Heinz; and Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. N-(cyanoalky)-3,5-dichlorobenzamide. 3,880,903, Cl. 260-465.00D.
Rolker, John H.; and Carson, Bradley A., to Eastman Kodak Company. Magnetic developer containing an electroless plating sensitizer, and method of using same. 3,880,689, Cl. 156-233.000.
Roll, Dieter, to Smart AG. Cutter with forwardly and rearwardly displaceable blade. 3,879,847, Cl. 30-162.000.
Roller-Werke Franke & Heidecke: *See—*
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Rometsch, Werner; and Veil, Karl. Apparatus for regulating the operation of hydraulic machines. 3,880,050, Cl. 91-374.000.
Rompa, Jozef Johannes Theresia. Lift for installation against a substantially vertical wall. 3,880,258, Cl. 187-2.000.
Roorda, Herm Jan: *See—*
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Roschynialski, Stanley. Pontoon boat trailing assembly. 3,879,781, Cl. 9-1.00T.
Rosengren, Stanley Irving, to Nabisco, Inc. Rotary cutter assembly. 3,880,030, Cl. 83-9.000.
Rosoff, Samuel, to General Electric Company. Therapeutic appliances. 3,880,155, Cl. 128-90.000.
Ross, Joseph I. Catv multi-tap distribution box. 3,881,160, Cl. 333-8.000.
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Roth, Charles F.; and Butler, Gordon C., to Xerox Corporation. Cleaning apparatus. 3,879,785, Cl. 15-1.500.
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Roubal, Joseph J. Stereo viewing apparatus. 3,880,495, Cl. 350-142.000.

Rowco Limited: *See—*
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Rowland, William Arnold, to Rowco Limited. Coffin kit. 3,879,818, Cl. 27-7.000.
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Guth, Lauren W.; and Roy, Mahlon T., 3,880,363.
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Rubin, Leonid Borisovich; Eremeeva, Olga Vladimirovna; Rubin, Andrei Borisovich; Gorjukhova, Natalya Mikhailovna; Ivanov, Andrei Valentinovich; Fraikin, Grigory Yakovlevich; and Gradova, Nina Borisovna. Method of cultivating microorganisms. 3,880,717, Cl. 195-112.000.
Rubrich, Lawrence M. Fluid fuse. 3,880,398, Cl. 251-16.000.
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Rucker Company, The: *See—*
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Rudolphy, Albert, to Hoechst Aktiengesellschaft. Modified natural resin binder and process for preparation. 3,880,788, Cl. 260-25.000.
Ruget, Gabriel, to Creusot-Loire. Apparatus for shelling vegetable products. 3,880,066, Cl. 99-468.000.
Ruhl, Karl: *See—*
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Russo, Doris A. Hair brush and comb cleaning apparatus. 3,879,787, Cl. 15-38.000.
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S.p.A. Luigi Rizzi & C.: *See—*
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Said, Sami I.; and Mutt, Viktor. Vasoactive intestinal peptide. 3,880,826, Cl. 260-112.500.
Saikaishi, Noboru, to Trio Electronics Incorporated. Method and apparatus for detecting the multi-path of FM stereo broadcasted waves. 3,881,155, Cl. 325-344.000.
St. Clair, Theodore A., to Textron Inc. Compensated rotary gas meter. 3,880,004, Cl. 73-254.000.
St. George, Alfred: *See—*
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St. Sauveur, Omer G., to Carl G. Peterson Co., Inc. Sensor construction for coil stock cradles and the like. 3,880,375, Cl. 242-78.700.
Sakaki, Hirokazu, to Fuji Photo Film Co., Ltd. Method of making lithographic and offset printing plates. 3,880,726, Cl. 204-17.000.
Sakakibara, Shumpei: *See—*
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Salihbegovic, Adnan; Matic, Bozidar; Zimonjic, Svetozar; Hadziomerovic, Faruk; Shubladze, Alexandr Michailovich; Okunev, Alexei Pavlovic; Yemeljanov, Stanislav Vasilyevich; and Kostyleva, Nataly Yevgenyevna, to Energoinvest-Istrazivacko-razvojni Centar za automatiku; and IAT-Institut po problemom upravlenia. Variable structure adaptive controller. 3,880,348, Cl. 235-150.100.
Salminen, Ilmari F.: *See—*
Lau, Philip T.; Salminen, Ilmari F.; and Beavers, Leo E., 3,880,661.
Salzman, Robert S.: *See—*
Wasserman, Saul; Salzman, Robert S.; and O'Keefe, Walter C., 3,880,083.
Salzman, Robert Stephen; and Goldman, Gerald Martin. Fluid operated lock. 3,879,970, Cl. 70-275.000.
Sandoz Ltd.: *See—*
Fleck, Fritz; Kittl, Hans; Schmid, Hans-Rudolf; Schmid, Horst; and Valenti, Salvatore, 3,880,841.
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Sapolsky, Roger, to Gulf and Western Manufacturing Company (Hastings). Sequential stamping of strip material. 3,880,034, Cl. 83-220.000.
Sardisco, John B., to Pennzoil Company. Hydrometallurgical process for the production of copper. 3,880,732, Cl. 204-107.000.
Sarff, Forest M.; and Birch, Silas B., Jr. Wire tying mechanism. 3,880,204, Cl. 140-93.00A.
Sargisson, Donald Farley, to General Electric Company. Variable cycle gas turbine engine. 3,879,941, Cl. 60-226.00R.
Sarishvili, Naskid Grigorievich: *See—*
Merzhanian, Artemy Arutjunovich; Brusilovsky, Sergei Alexeevich; Sarishvili, Naskid Grigorievich; Kishkovsky, Zbignev Nikolaevich; Bronshtein, Isaae Iosifovich; and Gagarin, Mikhail Alexeevich, 3,881,021.
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Sato, Hisatake, to Nippon Oil Company, Limited. Method for producing thermoplastic resin. 3,880,820, Cl. 260-82.000.
Sato, Masanori: *See—*
Miyao, Takayuki; Oya, Minoru; Yamada, Masatoshi; Kuno, Toshitaka; Yamaguchi, Masao; Katagiri, Haruo; Hattori, Katsuhiko; Sato, Masanori; and Toyota Jidosha Kogyo Kabushiki Kaisha, 3,880,017.
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Saucy, Gabriel, to Hoffman-La Roche Inc. Des-A steroidal intermediates. 3,880,911, Cl. 260-488.00B.
Saunders, Richard C., to Rockwell International Corporation. Thermoelectric elements and devices and process therefor. 3,880,674, Cl. 136-237.000.
Sawa, Yuji: *See—*
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Sawaya, Albert R., to Goodyear Tire & Rubber Company, The. Anionic dyeable polyester. 3,880,582, Cl. 8-115.500.
Sawyer, Robert J. Picture frame assembly. 3,879,873, Cl. 40-156.000.
Sawyer, Willard H., to Exxon Research and Engineering Company. Platinum-indium-molybdenum reforming catalysts. 3,880,748, Cl. 208-136.000.
Saxl, Erwin J. Tension meters. 3,879,999, Cl. 73-144.000.
Saye, Roland S. Marine craft steering means. 3,880,104, Cl. 114-144.00C.
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Scartazzini, Riccardo; Bickel, Hans; Heusler, Karl; and Woodward, Robert Burns, to Ciba-Geigy Corporation. Certain bis-(3-amino-2-oxo-1-azetidinyl)-disulfides. 3,880,833, Cl. 260-239.00A.
Schaming, Edward J. Coolant distribution and control system for metal rolling mills and the like. 3,880,358, Cl. 239-551.000.
Scharfen, Hans, to Paul Forkardt Kommanditgesellschaft. Chuck for machine tools. 3,880,437, Cl. 279-5.000.
Scharlack, Ronald S., to Kelsey-Hayes Company. Skid control system. 3,880,474, Cl. 303-21.00P.

Scheben, Hans, to Stabilus GmbH. Seat of adjustable height having an adjustable back. 3,880,465, Cl. 297-345.000.

Scheele, Edial Francois, to U.S. Philips Corporation. Cathode ray tube comprising a non-rotationally symmetrical element. 3,881,136, Cl. 313-453.000.

Scheer, Kurt. Apparatus for producing a settable distance marker. 3,881,176, Cl. 343-5.0EM.

Scheidmeir, Walter; Bressel, Ulrich; and Hohenschutz, Heinz, to BASF Aktiengesellschaft. Production of alpha-chlorocarboxylic acid chlorides. 3,880,923, Cl. 260-544.00Y.

Scheinpflug, Hans: *See—*
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Scheuermann, Horst, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. 4-Alkoxy-N-aminonaphthalic acid imides as optical brightners. 3,880,857, Cl. 260-281.000.

Scheuermann, Horst; and Hell, Peter-Matthias, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. N-substituted-4-alkoxynaphthalimides. 3,880,859, Cl. 260-281.000.

Scheuermann, Horst; Mach, Wolfgang; and Augart, Dietmar, to BASF Aktiengesellschaft. Dyes of the benzopyrane series. 3,880,869, Cl. 260-296.00P.

Schiffl, Heinz: *See—*
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Schilling, Rainer; and Ferenczefy, Ladislaus, to Robert Bosch G.m.b.H. Trigger mechanism for a power tool. 3,881,081, Cl. 200-157.000.

Schindler, Hans, to Braun Aktiengesellschaft. Filler valves for gas lighters. 3,880,213, Cl. 141-295.000.

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Schirtzinger, Paul E.: *See—*
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Schlaudroff, Leo M.: *See—*
McKinley, Hollace R.; and Schlaudroff, Leo M., 3,879,842.

Schlegel, Paul D., to Gates Rubber Company, The. Anti-windlift low profile windshield wiper blade. 3,879,793, Cl. 15-250.420.

Schlenz, Louis W.: *See—*
Everett, Donald B.; and Schlenz, Louis W., 3,880,146.

Schlichte, Max, to Siemens Aktiengesellschaft. Pulse code modulation time division switching system. 3,881,064, Cl. 179-15.0A.

Schmelzer, Kerry D. Cooler having apparatus for selectively storing or deploying trays. 3,880,485, Cl. 312-282.000.

Schmid, Hans-Rudolf: *See—*
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Schmid, Willi. Planter. 3,879,889, Cl. 47-1.200.

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Schmidt, Felix Helmut: *See—*
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Schmidt, Karl-Julius; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. Insecticidal and acaricidal phosphorous-containing esters of 2-hydroxyquinoxaline. 3,880,997, Cl. 424-200.000.

Schmidt, Ralph O., to Interstate Electronics Corporation. Apparatus for determining position location based on range differences. 3,881,096, Cl. 235-150.270.

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Schneider, Hans; Hussner, Richard Gustav; and Fischer, Raimund Erhard, to Deutsche Texaco Aktiengesellschaft. Method for preventing coke obstructions in pyrolysis plants. 3,880,621, Cl. 55-97.000.

Schneider, Henry G. Stamp mount envelope. 3,879,875, Cl. 40-159.000.

Schneider, Richard S., to Syva Company. Immunoassay for haptens. 3,880,715, Cl. 195-103.50R.

Schneider, William P.: *See—*
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Schnier, Edward A., to A-T-O Inc. Driven transfer roll for labeling machine. 3,880,115, Cl. 118-231.000.

Schnoes, Heinrich K.: *See—*
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Schoenhenz, Daniel, to Societe Anonyme D.B.A. Trailer disc brake and friction pad therefor. 3,880,260, Cl. 188-72.900.

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Schott, Dan J., to Beckman Instruments, Inc. Gas discharge display panel system with probe for igniting and extinguishing cells. 3,881,131, Cl. 315-275.000.

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Schott, Walter E., to Schott Industries, Inc. Pallet. 3,880,093, Cl. 108-55.000.

Schrieken, Jan, to Koninklijke Machinefabriek Stork, B.V. Turbine. 3,880,549, Cl. 415-95.000.

Schroer, Walter: *See—*
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Schudel, Peter: *See—*
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Schuhmacher, Alfred: *See—*
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Schulze, Herbert C. Method for extrusion. 3,880,664, Cl. 106-99.000.

Schulze, Stephen: *See—*
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Schwartz, Robert; and Goldberg, Morris. Orthodontic appliance system. 3,879,849, Cl. 32-14.00R.

Schwarz, Werner, to Technisches Entwicklungs Buro, Ltd. Apparatus for comminuting trash. 3,880,361, Cl. 241-36.000.

Schwedhelm, Werner: *See—*
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Schweizer, Paul Edward; Toepfer, Edwin Frank; and Warnock, Merville Lee, to Bell Telephone Laboratories, Incorporated. Key operated lock. 3,879,968, Cl. 70-81.000.

Schwieter, Ulrich: *See—*
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Schwindt, Bernell W.: *See—*
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Scogin, Clifford A. Room heater. 3,880,140, Cl. 126-110.00R.

Scott, Leo R.: *See—*
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Scott, Robert J., to Rival Manufacturing Company. Electric cooking utensil having a removable ceramic vessel. 3,881,090, Cl. 219-433.000.

Scott USA: *See—*
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Seeber, Howard Arthur; Marchisen, Joseph; and Brozena, Edward John, to Johns-Manville Corporation. Rigid foamed plastic pallet. 3,880,092, Cl. 108-55.000.

Segal, Fred. Hole saw assembly. 3,880,546, Cl. 408-204.000.

Sehmel, George A., to United States of America, Atomic Energy Commission. Parallel point to plane electrostatic precipitator particle size sampler. 3,879,986, Cl. 73-28.000.

Seifert, Richard L., to Optical Apparatus Co., Inc. Apparatus for automatically positioning and printing with respect to an index mark. 3,880,074, Cl. 101-38.00A.

Seiko Koki Kabushiki Kaisha: *See—*
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Seki, Morisuke: *See—*
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Sellstedt, John H., to American Home Products Corporation. 5-Aryl-3H-1,4-benzodiazepine-2-phosphonic acids and derivatives. 3,880,835, Cl. 260-239.0BD.

Sellstedt, John H., to American Home Products Corporation. Process for the preparation of 6-aryl-4H-s-triazolo-[4,3-a][1,4]benzodiazepines. 3,880,876, Cl. 260-308.00R.

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Sellstedt, John H.: *See—*
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Seng, Florin; Ley, Kurt; and Metzger, Karl Georg. Imines as antibacterial agents. 3,881,009, Cl. 424-250.000.

Senju, Ryoichi; and Higuchi, Mitsuo, to Ryoichi Senju. Process of producing carbamoylalkyl derivatives of high molecular compounds. 3,880,831, Cl. 260-232.000.

Serini, Volker; Humme, Gert; Ott, Karl-Heinz; Cohnen, Wolfgang; and Vernaleken, Hugo, to Bayer Aktiengesellschaft. Transparent moulding composition of a polycarbonate and a resin. 3,880,783, Cl. 260-3.000.

Serota, Samuel: *See—*
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Sessody, Donald W., to Applied Power Inc. Hydraulic work support of the collet type. 3,880,046, Cl. 279-4.000.

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Shadwell, David William, to Imperial Chemical Industries Limited. Clamp. 3,879,813, Cl. 24-243.0GC.

Shaffer, Francis N., to GTE Sylvania Incorporated. Method of making improved strontium magnesium pyrophosphate phosphor activated by divalent europium. 3,880,768, Cl. 252-301.40P.

Shapcott, Bryan Percy, to Wood Brothers Glass Company Limited. Integral shaded area on single mark vessel to aid in view of meniscus. 3,880,012, Cl. 73-426.000.

Shapiro, Stanley; and Tyler, Derek E., to Olin Corporation. Processing copper base alloy. 3,880,678, Cl. 148-11.50R.

Sharmaitis, Romas Romovich: *See—*
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Shavel, John, Jr.: *See—*
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Shaw, Alexander. Fume incinerator. 3,880,594, Cl. 23-277.00C.

Shaw, Norman: *See—*
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Shaw, Richard H., to United Aircraft Corporation. Helically fluted deep hole cathode and method of making same. 3,880,745, Cl. 204-290.00R.

Shaw, Robert R.; and Snitzer, Elias, to American Optical Corporation. Fluoroborate glass exhibiting fluorescence at 1.06 micrometers. 3,880,663, Cl. 106-47.00Q.

Shea, Michael D.: *See—*
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Sheardown, John Maxwell. Control valves for fluids. 3,880,184, Cl. 137-454.200.

Sheffield, Ellis W.: *See—*
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Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, to Betz Laboratories, Inc. N-2-nitrobutyl morpholine mixed with n-alkyldimethyl-benzyl ammonium chloride as slime control composition. 3,881,008, Cl. 424-248.000.

Shen, Mitchel; Mandell, Robert B.; and Stark, Lawrence. Physiologically compatible plastic contact lenses and a method for their production. 3,880,818, Cl. 260-80.750.

Shephard, Bernard William; and Draper, Kenneth George, to Ipeco Europe Limited. Seat with back support. 3,880,463, Cl. 297-284.000.

Shepherd, Thomas T.; and Gould, Francis E., to National Patent Development Corporation. Powdered water-insoluble polymers containing absorbed additives. 3,881,026, Cl. 426-223.000.

Shevchenko, Anatoly Filippovich: *See—*
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Shibata, Akira, to Chugai Denki Kogyo Kabushiki-Kaisha. Composite electrical contact material comprising Ag and intermetallic compounds. 3,880,777, Cl. 252-514.000.

Shibuya, Tatsuo; Hosoya, Takashi; Sudo, Fumio; Hoshino, Tsutomu; Yamada, Sunao; and Hiraoka, Hifumi, to Mitsubishi Chemical Industries, Ltd.; and Mitsubishi Kakoki Kaisha Ltd. Process for preparing purified coke oven gas. 3,880,617, Cl. 55-68.000.

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Shigeyoshi, Tuyoshi: *See—*
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Shiokawa, Koozo: *See—*
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Shiozawa, Kaoru: *See—*
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Shlesinger, Bernard Edward, Jr. Tight fitting plug connection. 3,880,492, Cl. 339-117.00P.

Shook, Hugh Thomas, to Moore and Hanks Company. Filter system. 3,880,625, Cl. 55-473.000.

Showalter, William E.; Huffman, Joseph G.; and Caldwell, John C., Jr., to Union Oil Company of California. Apparatus for detecting high temperature in wells. 3,880,234, Cl. 166-251.000.

Shreev, George E., to Symmonds, Gene B. Ball bearing feeder. 3,880,322, Cl. 221-296.000.

Shubladze, Alexandr Michailovich: *See—*
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Shulick, Robert J., to Babson Bros. Co. Rotary coupling. 3,880,120, Cl. 119-14.040.

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Sicina, Marion P., to Raymond Lee Organization, Inc., The, a part interest. Jewelry Box. 3,880,484, Cl. 312-202.000.

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Sifre, Gaston; and Barandon, Rene, to Societe Generale de Constructions Electriques et Mecaniques (Alsthom). Method for the transfer of a gas of high purity. 3,880,681, Cl. 148-175.000.

Sikora, Leopold: *See—*
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Silver, Morris L., to Super Skate Incorporated. Tandem roller hockey skate. 3,880,441, Cl. 280-11.220.

Simington, Jack F. Chain saw sharpener. 3,880,018, Cl. 76-25.00A.

Simmons, Eugene H., to Hudson Engineering Corporation. Flare tower. 3,880,573, Cl. 431-202.000.

Simmons, Lee G. Pole-syringe for injecting from a remote distance. 3,880,162, Cl. 128-218.00R.

Singer Company, The: *See—*
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Singh, Balwant, to American Cyanamid Company. Azomethinimine dyes. 3,880,881, Cl. 260-326.100.

Sirrenberg, Wilhelm; and Homeyer, Bernhard, to Bayer Aktiengesellschaft. O-phenyl-N-alkyl(alkenyl)-ethanephosphonic acid ester amides. 3,880,960, Cl. 260-956.000.

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Skoultchi, Martin M., to National Starch and Chemical Corporation. Adhesive and sealant compositions. 3,880,956, Cl. 260-89.50R.

Slavin, James A., to Nolte, Albert C., Jr., a part interest. Attachments for preventing fuel pilferage and incorrect fuel supply. 3,880,214, Cl. 141-346.000.

Slawinski, Michael F.; and Cylkowski, Joseph J. Bidet toilet seat. 3,879,769, Cl. 4-7.000.

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Smead Manufacturing Company: *See—*
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Smith, Woodrow Wilson; and Youngquist, Jack, to Kuhlman Corporation. Dual interlocked safety spring assembly and methods and machines for the manufacture thereof. 3,880,414, Cl. 267-168.000.
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Snavely, Earl S., Jr.; and Bertness, Theodore A., to Mobil Oil Corporation. Prevention of scale in petroleum production by alkaline floods. 3,880,237, Cl. 166-303.000.
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Steele, Robert L., to Standard Brands Incorporated. Soybean process. 3,881,033, Cl. 426-385.000.

Stehle, John J.; and Davis, Robert E., to Best Barricade Company, Inc. Plastic traffic barricade. 3,880,406, Cl. 256-64.000.

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Steinga Richard R.; and Lawson, Thomas W., to International Harvester Company. Cotton harvester basket lock. 3,880,468, Cl. 298-11.000.

Stenger, Richard E.; St. George, Alfred; and Kepf, Peter F., to General Electric Company. Gas turbine engine fuel delivery tube assembly. 3,879,940, Cl. 60-39.74R.

Stenzel, Jurgen. Process for removing nitrogen oxides from exhaust gases. 3,880,982, Cl. 423-213.200.

Stephens, James B.; Mahadevan, Parameswar; and Chuan, Raymond L., to California Institute of Technology. Method and apparatus for the detection of nitric oxide. 3,881,111, Cl. 250-373.000.

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Stevenson, Billy E.; and Rumsey, Thomas R., to Royal Industries, Inc. Motor vehicle security system and security method. 3,880,477, Cl. 303-89.000.

Stewart, Leslie C., to Center for Communications Research, Inc. System for visual display of signal parameters such as the parameters of speech signals for speech training purposes. 3,881,059, Cl. 179-1.0SP.

Stickle, Daniel T. Tortilla centering device. 3,880,065, Cl. 99-353.000.

Stiller, Armin, to Roller-Werke Franke & Heidecke. Switching arrangement for igniting supplementary flash light units. 3,881,130, Cl. 315-230.000.

Stirrat, George F., to Ford Motor Company. Valve actuation mechanism including valve lash adjustment means. 3,880,128, Cl. 123-90.520.

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Strader, James W. Glitter fishing lure. 3,879,883, Cl. 43-42.320.

Stratton, Cleo C. Air filter and humidifier. 3,880,124, Cl. 123-25.00A.

Straube, Elmar, to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft. Diffusion tower for extracting particulate material. 3,880,667, Cl. 127-7.000.

Strickland, William A., Jr. Mimic positioning controller for a hydraulically actuated back hoe. 3,880,304, Cl. 214-138.00R.

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Sumoto, Misao; Komagata, Hideki; and Matsumoto, Hiroshi, to Toyo Boseki Kabushiki Kaisha. Production of elastic yarn. 3,880,976, Cl. 264-210.00F.

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Suzuki, Takeo; Tomita, Fusao; and Ito, Seiga, to Kyowa Hakko Kogyo Kabushiki Kaisha. Process for producing high-molecular nucleic acids by fermentation. 3,880,738, Cl. 195-28.00N.

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Svensson, Lennart, to Allmanna Svenska Elektriska Aktiebolaget. Method of coiling strip-formed material and a means for carrying out the method. 3,880,376, Cl. 242-83.000.

Swanson, Earl E. Golf training and practice device. 3,880,431, Cl. 273-183.00B.

Swanson, Kermit E., to R. R. Donnelley & Sons Company. Collator for printed sheets. 3,880,418, Cl. 270-54.000.

Swanson, Kermit E., to R. R. Donnelley & Sons Company. Apparatus for feeding printed sheets. 3,880,419, Cl. 271-3.100.

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Szakasits, Julius J.; and Krc, Alfred E., to Shell Oil Company. Method and apparatus for total analysis of hydrocarbon samples. 3,880,587, Cl. 23-230.0PC.
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Takeuchi, Tetsuo; and Shiozawa, Kaoru, to Mitsui Shipbuilding and Engineering Co. Ltd. Apparatus for welding a flange to a pipe. 3,880,340, Cl. 228-45.000.
Takikawa, Naohisa: *See—*
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Tasaka, Takeo: *See—*
Hara, Kazuo; Bando, Satoshi; Yoshitake, Toshihiko; and Tasaka, Takeo, 3,880,950.
Tasaki, Akira. Method and device for measuring oxygen partial pressure. 3,881,152, Cl. 324-36.000.
Tate, William H. Manufacturing of cheese. 3,881,035, Cl. 426-582.000.
Taylor, Charles J.: *See—*
Wolford, Dale E.; Meister, David L.; and Taylor, Charles J., 3,880,553.
Taylor, Donald R., to Molins Machine Company, Inc. Rotary shear assembly. 3,880,033, Cl. 83-104.000.
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Taylor, Ray D., to B. F. Goodrich Company, The. Thiocarbamylsulfenamides. 3,880,836, Cl. 260-239.0BF.
TCI, Inc.: *See—*
Harrom, Harley A., 3,880,469.
Teach, Eugene G., to Stauffer Chemical Company. Alkoxy substituted carbanilates. 3,880,909, Cl. 260-471.00C.
Teach, Eugene G.: *See—*
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Technisches Entwicklungs Buro, Ltd.: *See—*
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Tektronix, Inc.: *See—*
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Ishihara, Masao; Terada, Sadatugu; Mayama, Masayoshi; Kobayashi, Tohru; and Maeda, Riyouzou, 3,880,660.
Termansen, Poul Erik; and Baatrup, Johannes Vagn, to Danfoss A/S. Operating mechanism for steering systems or the like. 3,880,554, Cl. 418-61.00B.
Terry, Bernard William Hugh: *See—*
Costain, Winston; and Terry, Bernard William Hugh, 3,880,893.
Teshima, Hiroo: *See—*
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Tessler, Martin M., to National Starch and Chemical Corporation. Starch ether derivatives and preparation thereof. 3,880,832, Cl. 260-233.30R.
Test, Societe anonyme d'Etudes techniques: *See—*
Beguin, Rene, 3,880,388.
Teton Toy Development Company: *See—*
Brookson, Robert H., Jr.; and Greig, Richard G., 3,879,887.
Texaco Inc.: *See—*
Knifton, John F., 3,880,898.
Smith, Ivan L., 3,880,576.
Texas Eastern Transmission Corporation: *See—*
Goodrich, Baxter D.; and Atterbury, Thomas J., 3,880,195.
Texas Instruments Incorporated: *See—*
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Pederson, Kenneth C.; Jobe, Marshall W.; and Stanhope, Terry R., 3,881,101.
Textron Inc.: *See—*
St. Clair, Theodore A., 3,880,004.
Textured Yarn Co., Inc.: *See—*
Stanley, Robert K., 3,879,821.
Thakkar, Arvind L.; and Diller, Erold R., to Eli Lilly and Company. Pharmaceutical dispersible powder of sitosterols and a method for the preparation thereof. 3,881,005, Cl. 424-238.000.
Tham, Min Jack; and Closmann, Philip Joseph, to Shell Oil Company. Solvent/non-solvent pyrolysis of subterranean oil shale. 3,880,238, Cl. 166-303.000.
Thanawala, Hemesh Laxmidas, to Associated Electrical Industries Limited. Frequency selective damping circuits. 3,881,137, Cl. 317-53.000.
Therens, Jean-Jacques, legal representative: *See—*
Charbonney, Adrien Maurice, deceased; Therens, Jean-Jacques, legal representative; and Giger, Urs; 3,879,929.
Thermoplastic Engineering, Inc.: *See—*
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Thermovox GmbH: *See—*
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Thielecke, Wilfried: *See—*
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Thieme, Peter: *See—*
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Thien, Gerhard; and Fachbach, Heinz, to List, Hans. Internal combustion engine in sound-proof casing. 3,880,134, Cl. 123-195.00C.
Thiokol Chemical Corporation: *See—*
Brajer, Victor; Grossman, Walter B.; and Hosek, William S., 3,880,327.
Kennard, Harry M.; Handzel, James R.; and Peloubet, Elmore M., 3,880,326.
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Thomas, Alan John, to Rank Organisation Limited, The. Multiple channel colorimeter. 3,880,523, Cl. 356-79.000.
Thomas & Betts Corporation: *See—*
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Thomas, Frank A.; and Spatz, Donald D., to Osmonics, Inc., by said Spatz. Method and apparatus for separating cheese whey protein. 3,880,755, Cl. 210-91.000.
Thomas, Mit. Fish hook with integral bait clip. 3,879,886, Cl. 43-44.600.
Thomason, Gary. Filtering system. 3,880,757, Cl. 210-167.000.
Thorn, William F.; and Smelser, Thomas W., to Rocket Research Corporation. Crash restraint inflator for steering wheel assembly. 3,880,447, Cl. 280-150.0AB.
Thornbald, Per Gosta, to Stal-Lavel Turbin AB. Sealing ring for turbo machines. 3,880,435, Cl. 277-53.000.
Thornton, Charles G.: *See—*
Da Costa, Harry; and Thornton, Charles G., 3,879,900.
Three Bond Co., Ltd.: *See—*
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Thurlow, Terence Norman: *See—*
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Thurston, Kelly W.; and Lundy, John H., to General Motors Corporation. Split cylinder engine and method of operation. 3,880,126, Cl. 123-70.00R.

Thyssen Niederrhein AG Hutten-und Walzwerke: *See—*
Grewer, Rudolf; Hickmann, Herbert; and Welke, Wolfgang, 3,880,306.

Tidewell, Hubert. Steerable truck with reversible castering wheel structure for trailers. 3,880,440, Cl. 280-81.00A.

TIE/Communications, Inc.: *See—*
Ichikawa, Mihikiro; Gotoh, Kazuyuki; and Kerman, Stephen E., 3,881,069.

Tilburg, Jan Van. Expanding fibrous or plastic material by adding puffing agent under pressure and subsequent pressure release. 3,880,705, Cl. 162-101.000.

Tilton, Andre E.: *See—*
Hafner, Harold C.; and Tilton, Andre E., 3,880,638.

Timmerman, Hubert G. Gas generating compositions and apparatus. 3,880,595, Cl. 23-281.000.

Timms, Rayford W.: *See—*
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Tipman, Norman Robert. Hydro metallurgical process for copper recovery. 3,880,647, Cl. 75-.50A.

Tischler, Henry J., to Gulf & Western Metals Forming Company. Seat construction. 3,880,467, Cl. 297-452.000.

Tkach, Richard W.: *See—*
Mallams, Alan K.; Tkach, Richard W.; Weinstein, Marvin J.; and Wagman, Gerald H., 3,880,828.

TL Systems Corporation: *See—*
Trechsel, Hans W.; Larson, Allan B.; and Ryerse, John A., 3,880,053.

Tobin, James E., to Scott USA. Strapless ski pole grip. 3,880,443, Cl. 280-11.37H.

Tobin, Melvin W.; and Reese, Thomas J., to PPG Industries, Inc. Shaping glass sheets to complex bends. 3,880,636, Cl. 65-107.000.

Toemmeraas, Nils Christian. Shock absorbing vehicle bumper assembly. 3,880,455, Cl. 293-99.000.

Toepfer, Edwin Frank: *See—*
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Toi, Koji: *See—*
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Tomari, Seiji: *See—*
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Tomelleri, Giordano, to FMC Corporation. Aligning device for a pitting and halving machine for peaches and the like. 3,880,277, Cl. 198-260.000.

Tomita, Fusao: *See—*
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Tomono, Makoto; Nakamura, Ken; Tarumi, Niriyoshi; and Sato, Masayuki, to Konishiroku Photo Industry Co., Ltd. Toner image fixing device. 3,880,577, Cl. 432-60.000.

Tompsett, Michael Francis, to Bell Telephone Laboratories, Incorporated. Input circuit for semiconductor charge transfer devices. 3,881,117, Cl. 307-221.00D.

Toppan Containers Co., Ltd.: *See—*
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Toshiba Kikai Kabushiki Kaisha: *See—*
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Towne, Allen N.; and Bombicino, Thomas A., to New England Mica Company. Process for manufacturing mica sheet composites. 3,880,972, Cl. 264-87.000.

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Townshend, Stanley Charles: *See—*
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Toyo Jozo Kabushiki Kaisha: *See—*
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Toyoda, Kenichi: *See—*
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Traffic Control Products, Inc.: *See—*
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Traister, Robert L., to Xerox Corporation. Fuser control circuit for copying apparatus. 3,881,085, Cl. 219-216.000.

Transco Inc.: *See—*
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Trautvetter, Werner: *See—*
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Travis, Charles H.; Noller, Harry F.; and Beers, Eugene W., to Dymo Industries, Inc. Machine for making debossed displays and blank therefor. 3,880,270, Cl. 197-6.400.

Trechsel, Hans W.; Larson, Allan B.; and Ryerse, John A., to TL Systems Corporation. Pump. 3,880,053, Cl. 92-94.000.

Tremelin, James D.: *See—*
Musyt, William; and Tremelin, James D., 3,880,217.

Treta Gradska Bolnitza: *See—*
Popov, Karamfil Vladimirov, 3,880,170.

Treuner, Uwe D., to E. R. Squibb & Sons, Inc. Thiocarbonylthioacetyl cephalosporins. 3,880,845, Cl. 260-243.00C.

Treuner, Uwe D., to E. R. Squibb & Sons, Inc. Arylsulfonylformamidoximes. 3,880,907, Cl. 260-470.000.

Treuner, Uwe D.: *See—*
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Treutel, Georg: *See—*
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Trio Electronics Incorporated: *See—*
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Triplex Safety Glass Company Limited: *See—*
Jack, Henry Ross Scarlett; and Richards, Peter Henry, 3,880,635.

Troost, Alex. Method of making a roller assembly. 3,879,828, Cl. 29-148.40D.

Tropel, Inc.: *See—*
Munnerlyn, Charles R., 3,880,501.

Troshenkin, Boris Alexandrovich; Solovieva, Galina Ilinichna; Piskunov, Jury Nikolaevich; Ponomarenko, Viktor Germanovich; and Koval, Ivan Mikhailovich. Film type evaporator. 3,880,702, Cl. 159-13.00A.

TRW Inc.: *See—*
Anderson, Lawrence G., 3,880,480.
Koppang, Richard R.; Burge, Harland L., Jr.; Carter, Wallace A.; and Sheffield, Ellis W., 3,880,571.

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Tsukiura, Hiroshi: *See—*
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Tucker, Harold A.; and Kemp, Richard V., to B. F. Goodrich Company, The. Graft copolymers of vinylidene monomers onto trihalomethyl hydrocarbon glycidyl ether polymers. 3,880,957, Cl. 260-901.000.

Tucker, Sherman R., Sr. Drop-back clips and fishing apparatus. 3,879,884, Cl. 43-42.720.

Tuka, Hirohumi: *See—*
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Tummers, Leonard J. G.: *See—*
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Turner, Jess H.; Wallace, Elmer E.; and Hurd, Claud C., to Essex International Inc. Flow control devices. 3,880,186, Cl. 137-495.000.

Turner, John Angus William: *See—*
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Turner, John Harry Wallice, to Hardman & Holden Limited. Aluminum-containing pharmaceutical compositions. 3,880,901, Cl. 260-448.0AD.

Turner, John O., to Sun Research and Development Co. Novel process for the production of methylol. 3,880,936, Cl. 260-615.00A.

Turner, Michael Keith: *See—*
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Twaddell, Russell William; and Watson, Edwin Ben, to Bendix Corporation, The. Fuel injection system for an internal combustion engine. 3,880,131, Cl. 123-139.00E.

Tyler, Derek E.: *See—*
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Tyler, Hugh J., to Robertshaw Controls Company. Heating system and safety valve. 3,880,353, Cl. 236-9.00R.

U.I.P. Engineered Products Corporation: *See—*
Hart, Wallace L.; Vevang, Gordon D.; and Walkowicz, Herman J., 3,880,143.

UBE Industries Ltd.: *See—*
Ishii, Takami; Suzuki, Taro; Takikawa, Naohisa; Kitamura, Sunao; Wakabayashi, Tadamasa; and Kumahara, Hiromi, 3,880,804.

Ueda, Akiteru; Amano, Hisao; and Kawakami, Naoe, to Hitachi, Ltd. Method for protecting thyristors of a converter and system therefor. 3,881,147, Cl. 321-13.000.

Uhl, George A., to Atlantic Richfield Company. Apparatus for distributing particulate material over a zone. 3,880,300, Cl. 214-17.0CB.
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Ulyakova, Nina Mikhailovna: *See—*
Glazunov, Sergei Georgievich; Solonina, Olga Petrovna; Ulyakova, Nina Mikhailovna; Kuraeva, Vera Platonovna; Lyapicheva, Nadezhda Fedorovna; and Nikishov, Oleg Alexandrovich, 3,880,655.
Ungerer, Aaron J., to Standard Products Company, The. Adhesive barrier for plastic trim strip. 3,881,042, Cl. 428-67.000.
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Urban, John A.; Hopkins, Gary L.; and Armstrong, John Keith, to Eaton Corporation. Emergency Control Valve. 3,880,473, Cl. 303-9.000.
Uribe, Modine P. Adjustable eyeglass frame. 3,880,503, Cl. 351-60.000.
Urlings, Pierre M. G. J.; and Visseren, Marinus J. R., to Stamicarbon, B.V. Process for bonding together films based on cured butyl rubber, polychloroprene and/or rubber-like copolymers of ethylene, at least one other alpha-alkene and, optionally, one or several polyenes. 3,880,693, Cl. 156-273.000.
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Valin, Jean; and Bruyere, Jean Claude, to Centre National de la Recherche Scientifique; and Compagnie Internationale pour l'Informatique. Thin layer magnetic structures for binary information stores. 3,880,602, Cl. 29-195.000.
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van der Toorn; and Voetter, Heinz, to Shell Oil Company. Residual oil hydrodesulfurization apparatus. 3,880,598, Cl. 23-289.000.
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Van Assendelft, Leendert, to Organon Teknika B.V. Blood dialyzer. 3,880,759, Cl. 210-194.000.
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Van Den Berg, Cornelis E. P. V.; and Tummers, Leonard J. G., to Stamicarbon N.V. Process of preparing a sulphur-curable polymer of ethylene and at least one other alpha-alkene. 3,880,817, Cl. 260-80.700.
Van Horn, Charles A., to Chemetron Corporation. Method and apparatus for controlling heat effect in metal cutting operations. 3,880,354, Cl. 239-132.300.
Van Huis, Robert L., to U.S. Industries, Inc. Animal feeding trough apparatus with hinged trough. 3,880,121, Cl. 119-52.0AF.
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Van Polen, James C. Bale handling apparatus. 3,880,305, Cl. 214-147.00G.
Van Raalte, John A.; and Christiano, Victor, to RCA Corporation. Predetermined thickness profiles through electroplating. 3,880,725, Cl. 204-15.000.
Van Rheenen, Verlan H., to Upjohn Company, The. Bicyclic lactones. 3,880,887, Cl. 260-343.300.
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Verbakel, Godefriedus Hendrikus Waltherus, to Stork Amsterdam N.V. Device for removing the internal parts from slaughtered poultry. 3,879,803, Cl. 17-11.000.
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Viguie, Jean-Claude: *See—*
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Vileikis, Matthew J. Therapeutic treatment machine. 3,880,150, Cl. 128-24.300.

Villa, Jose L., to Thiokol Chemical Corporation. Inherently mold-releasable mold or casting composition. 3,880,949, Cl. 260-835.000.

Vincent, James H., to Royal Industries, Inc. Multiple-piece wing sections for cultivator and oscillation preventing device for same. 3,880,241, Cl. 172-311.000.

VioBin Corporation: *See—*
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Volkswagenwerk Aktiengesellschaft: *See—*
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Von Metnitz, Harald; Bleh, Otto; and Lenz, Arnold, to Dynamit Nobel Aktiengesellschaft. Method for preparation of $\Delta^{2,5}$-cyclohexadiene dicarboxylic acid-1,2 by reducing aqueous solutions of alkali phthalate with alkali amalgam. 3,880,915, Cl. 260-514.00K.

VonRonai-Horvath, Michael: *See—*
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von Strandtmann, Maximilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin, to Warner-Lambert Company. Substituted-O-hydroxy-ω-(methylsulfinyl)acetophenones and process for producing same. 3,880,861, Cl. 260-283.00S.

Voreck, Wallace E.; and Sides, James R., to United States of America, Navy. Castable high explosive of cyclotetramethylenetetranitramine and dodecenyl succinic anhydride-vinyl cyclohexene dioxide polymer binder. 3,880,683, Cl. 149-19.500.

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Vorkapich, Theodore, to American LaFrance Inc. Sprinkler with sidewall deflector. 3,880,239, Cl. 169-37.000.

Voronova, Natalya Alexandrovna; Shevchenko, Anatoly Filippovich; Lafer, Isaak Moiseevich; Dvoskin, Boris Vulfovich; Lavrentiev, Moris Leonidovich; Ostapchuk, Nikolai Petrovich; Kostitsyn, Evgeny Alexandrovich; and Emelyanov, Ivan Yakovlevich. Device for treatment of molten cast iron in vessels. 3,880,411, Cl. 266-34.00T.

Voss, Alfred; Kreutz, Heinz-Wilhelm; Kroschel, Heinz; and Strunk, Manfred, to Dynamit Nobel Aktiengesellschaft. Control flap unit for projectiles or rockets. 3,880,383, Cl. 244-3.270.

Vsesojuzny Nauchno-Issledovatelsky Institut Plenochnykh Materialov i Iskusstevennoi Kozhi: *See—*
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Wagener, Dietrich; Isermann, Friedrich; and Rietschle, Ernst, to Didier-Kellogg. Apparatus for charging coke-oven chambers. 3,880,720, Cl. 202-262.000.

Wagman, Gerald H.: *See—*
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Wagner, Howard S.: *See—*
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Wagner, Kuno; and Schroer, Walter, to Bayer Aktiengesellschaft. Solutions of diisocyanate polyaddition products which contain free semiacetals and which are stable in storage. 3,880,784, Cl. 260-13.000.

Waite, William, to Transco Inc. Temperature and sound insulated panel. 3,879,910, Cl. 52-145.000.

Wajaroff, Theodor, to Wella Aktiengesellschaft. Permanent hair shaping composition and method for using the same. 3,880,174, Cl. 132-7.000.

Wakabayashi, Tadamasa: *See—*
Ishii, Takami; Suzuki, Taro; Takikawa, Naohisa; Kitamura, Sunao; Wakabayashi, Tadamasa; and Kumahara, Hiromi, 3,880,804.

Wakefield, Lynn Burritt; Roberts, Durward Thomas, Jr.; and Kay, Edward Leo, to Firestone Tire & Rubber Company, The. Reaction of furfuraldehyde and pyrolysis oil tire scrap. 3,880,807, Cl. 260-51.00R.

Walker, Donald A. Bedding arrangement. 3,879,777, Cl. 5-334.00C.

Walker, Edward S.; and Douglas, George A., to Corning Glass Works. Article handling apparatus. 3,879,919, Cl. 53-59.00R.

Walker, Evan Harris: *See—*
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Walkowicz, Herman J.: *See—*
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Wall, Leo A.; and Antonucci, Joseph M., to United States of America, Navy. Highly fluorinated organic compounds and synthesis of perfluorostyrene. 3,880,943, Cl. 260-651.00F.

Walla, Klaus, to Siemens Aktiengesellschaft. Method and circuit arrangement for independently controlling the contrast and brightness adjustment of an image receiver, more particularly in videotelephone subscriber stations. 3,881,054, Cl. 178-7.30R.

Wallace, Elmer E.: *See—*
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Wallshein, Melvin. Orthodontic elastic appliance. 3,879,850, Cl. 32-14.00A.

Walser, Armin: *See—*
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Wampfler, Gene L., to Standard Oil Company. Recovery of metal and bromine catalysts components from residue of aromatic acid produced by and recovered from catalytic liquid phase oxidation. 3,880,920, Cl. 260-524.00R.

Wamser, Christian A., to Allied Chemical Corporation. Recovery of uranium from HCl digested phosphate rock solution. 3,880,980, Cl. 423-7.000.

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Warner-Lambert Company: *See—*
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Wasserman, Saul; Salzman, Robert S.; and O'Keefe, Walter C., to United States of America, Army. Bimetallic mass stabilized flechette. 3,880,083, Cl. 102-92.400.

Watai, Shigeru: *See—*
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Watkins, Gordon Leonard: *See—*
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Watson, James D., to Nalco Chemical Company. Waterflood process using alkoxylated low molecular weight acrylic acid polymers as scale inhibitors. 3,880,765, Cl. 252-8.55D.

Watson, Robert W., to Conco Inc. Load balancer with balance override control. 3,880,393, Cl. 248-325.000.

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Webber, John Alan, to Eli Lilly and Company. Antibiotic method. 3,880,851, Cl. 424-246.000.

Weber-Liel, Ralf. Work-glove. 3,879,764, Cl. 2-167.000.

Webster, Milo E., to Gillette Company, The. Manufacture gas propelled dispensers. 3,880,605, Cl. 29-407.000.

Wegener, Hans F., to National Steel Corporation. Pallet packaging. 3,880,286, Cl. 206-386.000.

Wehn, William E.; Cobel, George B.; and Lusby, William E., to Crucible Inc. Method for purification of titanium sponge. 3,880,652, Cl. 75-84.500.

Weigh-Tronix, Inc.: *See—*
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Weil, Sanford A., to Gas Developments Corporation. 3-Stream S-wheel and cooling mode operation. 3,880,224, Cl. 165-2.000.

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Weisbecker, Joseph A., to RCA Corporation. Read/write circuits for reliable digital recording. 3,881,183, Cl. 360-40.000.

Weiser, Dieter; Stockburger, Dieter; Thoma, Peter; Klocke, Hans-Joachim; Beyse, Hans-Jochen; and Thomae, Heinz. Manufacture of non-dusting or virtually non-dusting dye granules. 3,879,855, Cl. 34-10.000.

Weisglass, Louis L., to Berkey Photo, Inc. Color enlarger and illuminating system therefor. 3,880,520, Cl. 355-37.000.

Weismann, Victor P. Modular building panel. 3,879,908, Cl. 52-309.000.

Weiss, Alexander C. H. Artificial fireplace logs and method of producing. 3,880,611, Cl. 44-1.00E.

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Wella Aktiengesellschaft: *See—*
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Welland, John Michael. Gas flow control. 3,879,984, Cl. 73-23.100.

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Welschof, Hans-Heinrich; and Aucktor, Erich, to Lohr & Bromkamp GmbH. Constant velocity joint. 3,879,960, Cl. 64-21.000.

Welty, Albert B., Jr.; and Griffin, Lindsay I., Jr., to Exxon Research and Engineering Company. Flue gas desulfurization with ammonium sulfite-bisulfite solution. 3,880,983, Cl. 423-242.000.

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Bory, Michael, 3,881,107.

Werner, Paul, to Keiper, Fritz. Hinge fitting for adjustably connecting a seat and a backrest to each other, especially for motor vehicles. 3,879,802, Cl. 16-144.000.

Western Consumers Industries, Inc.: *See—*
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Western Electric Company, Incorporated: *See—*
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Weston Instruments, Inc.: *See—*
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Weyerhaeuser Company: *See—*
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Weyrich, Claus; and Winstel, Gunter, to Siemens Aktiengesellschaft. Liquid phase epitaxial process. 3,880,680, Cl. 148-171.000.

Whatley, Norman, Jr., to Raymond Lee Organization, Inc., The, a part interest. Solid state ignition system. 3,880,132, Cl. 123-148.00R.

Wheelabrator-Frye, Inc.: *See—*
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Whetsone, Clayton N. Laminated magnetic material. 3,880,603, Cl. 29-195.000.

Whidden, Roger W.: *See—*
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White, Edward L.; and Engelbart, Bernard, to N.L. Industries, Inc. Lead-silicate composite stabilizers. 3,880,773, Cl. 252-400.00A.

Whitehouse, Maynard L.: *See—*
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Whyte, Albert J., to Standex International Corporation. Bed stabilizing assembly. 3,879,796, Cl. 5-328.000.

Widdig, Arno; Kuhle, Engelbert; Grewe, Ferdinand; Kaspers, Helmut; Scheinpflug, Hans; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Substituted amidophenylguanidine fungicides. 3,881,018, Cl. 424-300.000.

Widmer, Hans, to BBC Brown Boveri & Company Limited. Low-fluid volume outdoor power circuit breaker. 3,881,080, Cl. 200-150.00R.

Wightman, William S.: *See—*
Grieves, Lowell G.; and Wightman, William S., 3,879,820.

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Wilkinson Sword Limited: *See—*
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Willett, George Howard, III. Conveyor chain. 3,880,276, Cl. 198-193.000.

Williams, Charles E., to Hough Manufacturing Corporation. Multidirectional suspension system for operable partitions. 3,879,799, Cl. 16-89.000.

Williams, Harold Malcolm Gordon. Security paper containing fused thermoplastic material distributed in a regular pattern. 3,880,706, Cl. 162-103.000.

Williams, Harrison L., to Preformed Line Products Company. Appliance for linear bodies. 3,879,780, Cl. 9-8.00R.

Williams, Maurice A.: *See—*
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Willis, Robert Anthony: *See—*
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Willis, Wesley Nelson; and Laing, Graham Sterling, to Bell-Northern Research Ltd.; and Northern Electric Company, Limited, a part interest to each. Housing for a telephone unit. 3,881,071, Cl. 179-179.000.

Willits, Samuel P.; and Mohan, William L., to Spartanics, Ltd. Electro-optical sensing apparatus. 3,881,102, Cl. 250-202.000.

Wills, Arthur B.: *See—*
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Willson, James R. Motor control system and electrical switch constructions therefor or the like. 3,881,116, Cl. 307-118.000.

Wilson, Calvin L., to Reynolds Metals Company. Flexible cooking container having powder distributed over its interior surfaces. 3,881,023, Cl. 426-132.000.

Wilson, Joseph Howard; and Heighton, Arthur Victor, to Overseas Containers Limited. Refrigeration installation for a container ship. 3,879,957, Cl. 62-240.000.

Wilson, Robert K.: *See—*
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Windmoller & Holscher: *See—*
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Winkler, Adolf, to Bayer Aktiengesellschaft. 2-Oxo-3,4-benzobicyclo-(3,3,1)-nonene-(3) carboxylic acids-8 thereof and process therefor. 3,880,917, Cl. 260-515.00R.

Winkler, Kurt K. Trailer storage container. 3,880,335, Cl. 224-42.130.

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Wisconsin Alumni Research Foundation: *See—*
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Wise, Roger Francis. Separator for cuttings. 3,880,762, Cl. 210-460.000.

Wisecarver, Warren R., to Bishop-Wisecarver Corporation. Extensible load bracing device. 3,880,394, Cl. 248-354.00S.

Wismer, Otto H. Waterpipe freeze detector. 3,880,180, Cl. 137-60.000.

Witte, Horst, to Kalle Aktiengesellschaft. Device for storing paper supply rolls in copying apparatuses. 3,880,372, Cl. 242-55.000.

Wokulat, Jorgen: *See—*
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Wolf, Milton; Sellstedt, John H.; and Fenichel, Richard L., to American Home Products Corporation. o-Mercapto-benzamides as hypoglycemia agents. 3,881,019, Cl. 424-324.000.

Wolford, Dale E.; Meister, David L.; and Taylor, Charles J., to Gorman-Rupp Company, The. Pumping system. 3,880,553, Cl. 417-360.000.

Wolfowitz, Stanley: *See—*
Zimmerman, Daniel; Schulze, Stephen; and Wolfowitz, Stanley, 3,880,966.

Wolpin, Kermit, to Hit Sales Corporation. Assembly method for a fob-key-ring assembly. 3,880,607, Cl. 29-439.000.

Wolter, Karl, to Levy-Russell Limited. Self steering mechanism. 3,880,439, Cl. 280-81.00A.

Wood Brothers Glass Company Limited: *See—*
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Wood, Charles D., III: *See—*
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Woodall, Jerry McPherson: *See—*
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Wooldridge, Gerald A.: *See—*
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Wootten, John A.; and Rives, George S., to Lear Siegler Inc. Method for injecting contrast media into the vascular system. 3,880,138, Cl. 128-2.00A.

Works, George A.; and Vickers, Harry, to Raytheon Company. Real-time fourier transformation apparatus. 3,881,100, Cl. 235-156.000.

Worth, Daniel L.; and Eiland, Phillip F., to Singer Company, The. Continuous yarn dyeing machines. 3,879,966, Cl. 68-203.000.

Wright, Calvin C.: *See—*
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Wright, Donald Perry, Jr.; Barringer, Donald Frederic, Jr.; and McKay, Donald Edward, to American Cyanamid Company. Hydrocinnamonitriles. 3,880,904, Cl. 260-465.00E.

Wright, Ralph R.; Wright, Calvin C.; and Petit, George S., to United States of America, Atomic Energy Commission. Electro-galvanic gold plating process. 3,880,730, Cl. 204-46.00G.

Wu, Chung Pao: *See—*
Douglas, Edward Curtis; Wu, Chung Pao; and Mueller, Charles William, 3,880,676.

Wunnenberg, Klaus; and Kleinen, Josef, to Mannesmann AG. Method of preparing a continuously cast ingot for rolling or the like. 3,880,601, Cl. 29-187.000.

Wusatowski, Roman: *See—*
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Yamada, Kiichi. Special power generating unit using compressed air produced by ocean wave together with super-heated steam. 3,879,950, Cl. 60-698.000.

Yamada, Masatoshi: *See—*
Miyao, Takayuki; Oya, Minoru; Yamada, Masatoshi; Kuno, Toshitaka; Yamaguchi, Masao; Katagiri, Haruo; Hattori, Katsuhiko; Sato, Masanori; and Toyota Jidosha Kogyo Kabushiki Kaisha, 3,880,017.

Yamada, Sunao: *See—*
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Yamamura Glass Kabushiki Kaisha: *See—*
Yasuhiro, Tomita; and Katsutoshi, Nakayama, 3,879,987.

Yamanaka, Shigeru; Kashima, Nobukazu; and Mitsugi, Koji, to Ajinomoto Co., Inc. Method for limiting damage due to bacteriophages in fermentation media. 3,880,718, Cl. 195-122.000.

Yamashita, Nobuo: *See—*
Kanehira, Katsuyuki; and Yamashita, Nobuo, 3,880,148.

Yarborough, John M., Jr.: *See—*
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Yasuda, Tetuya; Suda, Haruo; and Kasama, Noriyuki, to Citzen Watch Co., Ltd. Electronic watch with an electronically operated sound producer. 3,879,931, Cl. 58-38.000.

Yasuhiro, Tomita; and Katsutoshi, Nakayama, to Yamamura Glass Kabushiki Kaisha. Device for examining inner pressure resistance of glass bottle. 3,879,987, Cl. 73-37.000.

Yatcilla, George: *See—*
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Yemeljanov, Stanislav Vasilyevich: *See—*
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Yokoyama, Yosihei, to Yokoyama Tekko Kabushiki Kaisha. Automatic lumbering apparatus. 3,880,036, Cl. 83-421.000.

Yolles, Seymour, to Brook, David E., a part interest. Polymeric article for dispensing drugs. 3,880,991, Cl. 424-22.000.

Yoneda, Kozo: *See—*
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Yonetani, Ukio: *See—*
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Yorston, James K.: *See—*
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Yoshikawa, Shinsuke; and Sawa, Yuji, to Kureha Kagaku Kogyo Kabushiki Kaisha; and Mitsui Toatsu Chemicals Inc. Blow molding process for forming a molding having a screw-thread portion. 3,880,973, Cl. 264-94.000.

Yoshitake, Toshihiko: *See—*
Hara, Kazuo; Bando, Satoshi; Yoshitake, Toshihiko; and Tasaka, Takeo, 3,880,950.

Yoshizawa, Toshio; Yamada, Yasuo; Taniguchi, Toshinori; Kose, Tatsuo; Ohchi, Kazuo; and Hori, Kiyokazu, to Kabushiki Kaisha Toyodo Jidoshiokki Seisakusho; and Daiwa Boseki Kabushiki Kaisha. Rotary doffer in automatic doffing apparatus. 3,879,925, Cl. 57-53.000.

Young, Glenn A. Transportable camper fireplace. 3,880,139, Cl. 126-9.00R.

Young, John Radley: *See—*
Biddell, David Colin; Sansome, Dennis Hugh; Winsper, Colin Edward; and Young, John Radley, 3,879,974.

Young, Melburne E. Saw sharpener apparatus. 3,880,019, Cl. 76-37.000.

Youngquist, Jack: *See—*
Smith, Woodrow Wilson; and Youngquist, Jack, 3,880,414.

Yurugi, Shojiro; and Kikuchi, Shintaro, to Takeda Chemical Industries, Ltd. Pyrimido(4,5-d)pyridazine derivatives and process for producing them. 3,880,850, Cl. 260-246.00B.

Zadow, Dale W.: *See—*
Berry, Holland J.; Hardy, William C.; and Zadow, Dale W., 3,880,235.

Zaidan Hojin Handotai Kenkyu Shinkokai: *See—*
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Zarouni, Alfred: *See—*
Connell, Joseph Bernard; and Zarouni, Alfred, 3,881,060.

Zboril, Josef, to BBC Brown Boveri & Company Limited. Self-lubricating slide element. 3,880,600, Cl. 29-182.500.

Zbrojovka Vsetin, narodni podnik: *See—*
Riha, Petr; Kovar, Stanislav; and Cernocky, Jiri, 3,880,199.

Zenith Radio Corporation: *See—*
Kaplan, Sam H., 3,881,044.

Zenzefilis, George E. Magnetic disc drive. 3,881,188, Cl. 360-97.000.

Zglobicki, Edward: *See—*
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Ziegler, Robert J.; and Liebermar., Hillel, to Betz Laboratories, Inc. Methods and compositions to enhance tall oil soap separation from waste pulping liquor. 3,880,704, Cl. 162-16.000.

Zimmerman, Daniel; Schulze, Stephen; and Wolfowitz, Stanley, to Celanese Corporation. Corona treated microporous film. 3,880,966, Cl. 264-25.000.

Zimmerman, Robert; Felfoldi, Ferenc; and Mako, Ferenc, to Videoton Radio-s Televiziogyar. Vobulated oscillator with co-tuned harmonic filter having magnetically tuned inductive elements. 3,881,159, Cl. 331-77.000.

Zimmerman, Sanford S. Apparatus for cutting irregular edge contours in relatively flat workpieces. 3,880,048, Cl. 90-13.400.
Zimonjic, Svetozar: *See*—
Salihbegovic, Adnan; Matic, Bozidar; Zimonjic, Svetozar; Hadziomerovic, Faruk; Shubladze, Alexandr Michailovich; Okunev, Alexei Pavlovic; Yemeljanov, Stanislav Vasilyevich; and Kostyleva, Nataly Yevgenyevna, 3,880,348.
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Zollinger, Howard A.; Lubbers, Leroy; and Stubbs, William K., to Rapistan, Incorporated. Warehousing system. 3,880,299, Cl. 214-16.40B.
Zuckler, Karl, to Siemens Aktiengesellschaft. Compressed-gas electric circuit breaker. 3,881,079, Cl. 200-148.00A.
Zwach, Hans: *See*—
Jurging, Klaus; and Zwach, Hans, 3,880,727.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF APRIL, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aboaf, Joseph A., and T. O. Sedgwick, to International Business Machines Corp. Method for controlling semiconductor surface potential. Re. 28,402, 4–29–75, Cl. 117—215.

Actor, Philip P., and J. F. Pagano, to Smithkline Corp. 5(6)-N-butyl and N-propoxy-2-carbomethoxyaminobenzimidazoles. Re. 28,403, 4–29–75, Cl. 260—309.2.

Burgin, Luther B. Automatic grade and slope control apparatus. Re. 28,400, 4–29–75, Cl. 404—84.

Case, J. I., Co. : *See*—
Dubinsky, Terence N. Re. 28,401.

Dubinsky, Terence N., to J. I. Case Co. Hydrostatic bearing. Re. 28,401, 4–29–75, Cl. 418—73.

International Business Machines Corp. : *See*—
Aboaf, Joseph A., and Sedgwick. Re. 28,402.

McFarlin, Robert W. Continuous electrical outlet with ground. Re. 28,404, 4–29–75, Cl. 339—14.

Pagano, Joseph F. : *See*—
Actor, Philip P., and Pagano. Re. 28,403.

Searle, G. D., & Co. : *See*—
Zipper, Jaime A. Re. 28,399.

Sedgwick, Thomas O. : *See*—
Aboaf, Joseph A., and Sedgwick. Re. 28,402.

Smithkline Corp. : *See*—
Actor, Philip P., and Pagano. Re. 28,403.

Zipper, Jaime A., to G. D. Searle & Co. Intrauterine contraceptive method. Re. 28,399, 4–29–75, Cl. 128—130.

LIST OF PLANT PATENTEES

Bald Hill Research, Inc. : *See*—
Savella, Angelo L. 3,709.

Ecke, Paul, Ranch : *See*—
Ecke, Paul, Jr. 3,711.

Ecke, Paul, Jr., to Paul Ecke Ranch. Poinsettia plant. 3,711, 4–29–75, Cl. 86.

Pinkerton, John. Avocado tree. 3,712, 4–29–75, Cl. 44.

Savella, Angelo L., to Bald Hill Research, Inc. Rhododendron plant. 3,709, 4–29–75, Cl. 57.

Weeks, O. L. Rose plant. 3,710, 4–29–75, Cl. 11.

LIST OF DESIGN PATENTEES

Achenbach, Walter B., to Owens-Illinois, Inc. Decanter with lid or similar article. 234,998, 4–29–75, Cl. D7—52.

Anderson, H. Dwight, and D. L. Travis. Motorcycle shield. 235,011, 4–29–75, Cl. D12—182.

Atkins, Herbert A. Capped bottle. 235,032, 4–29–75, Cl. D9—44.

Avant, Richard H., to Benzomatic Corp. Thermo fogging unit. 235,016, 4–29–75, Cl. D23—18.

Beeler, Benjamin C. Spray head. 235,017, 4–29–75, Cl. D23—34.

Benzomatic Corp. : *See*—
Avant, Richard H. 235,016.

Bloom, Loren M. Mobile or similar article. 235,024, 4–29–75, Cl. D29—1.

Bogdahn, Manfred. Retractable dog leash. 235,026, 4–29–75, Cl. D30—39.

Brandle, Kurt. Adjustable frame for a furniture seat. 234,995, 4–29–75, Cl. D6—191.

Braun, Morris, to W. Braun Co. Bottle. 235,007, 4–29–75, Cl. D9—149.

Braun, W., Co. : *See*—
Braun, Morris. 235,007.

Bunten, Paul. Marine air conditioner. 235,019, 4–29–75, Cl. D23—142.

Burk, Burton, to Burton Burk Inc. Combined shelf and bracket therefor. 234,992, 4–29–75, Cl. D6—132.

Burk, Burton, Inc. : *See*—
Burk, Burton. 234,992.

Clegg, Wayne D. Quick change range extender system for TV zoom lens. 235,034, 4–29–75, Cl. D61—1.

Dynek Corp. : *See*—
Stern, Emanuel. 235,015.

Eastman Kodak Co. : *See*—
Swayze, Samuel F. 235,023.

Engelmann, Joachim. Radio housing. 235,033, 4–29–75, Cl. D56—4.

Environment/One Corp. : *See*—
Peters, Philip H., Jr., and Matrone. 235,000.
Peters, Philip H., Jr., and Matrone. 235,018.

Flex-A-Lite Corp. : *See*—
Fulton, Theodore A. 235,021.

Francis, John P. Dog supported disposable waste bag for droppings. 235,027, 4–29–75, Cl. D30—99.

Francis, John P. Dog supported disposable waste bag for droppings. 235,028, 4–29–75, Cl. D30—99.

Fulton, Theodore A., to Flex-A-Lite Corp. Fan. 235,021, 4–29–75, Cl. D23—165.

Gentile, Josie, to Maidenform, Inc. Panty girdle. 234,984, 4–29–75, Cl. D2—4.

Gilbert, Evalin S. Table. 234,993, 4–29–75, Cl. D6—177.

Hewson, Kenneth E. : *See*—
Sutton, Lawrence R., Ranno, and Hewson. 235,005.

Hirsh, Alvin. Pizza. 234,983, 4–29–75, Cl. D1—16.

Holt, Jorgen, to Nordisk Ventilator Co. Aktieselskab. Injection nozzle rim for ventilating apparatus. 235,020, 4–29–75, Cl. D23—163.

Hugon, Daniel. Motorcycle fairing. 235,010, 4–29–75, Cl. D12—182.

Hugon, Daniel. Motorcycle fairing. 235,012, 4–29–75, Cl. D12—182.

Hugon, Daniel. Motorcycle fairing. 235,013, 4–29–75, Cl. D12—182.

Insalaco, Richard, Chisel sharpening jig. 235,003, 4–29–75, Cl. D8—72.

Ishikawa, Minoru. to Omron Tateisi Electronics Co. Timer. 235,008, 4–29–75, Cl. D10—40.

J & G Productions Ltd. : *See*—
Stewart, James E. 234,999.

Jansen, George E., to P. K. and H. K. Krikorian, fractional part interest to each. Bedding plant tray. 235,031, 4–29–75. Cl. D35—3.

Jolly, James D. Carrying and storage case for painters' materials or the like. 235,037, 4–29–75, Cl. D87—1.

Kabushiki Kaisha Morita Seisakusho : *See*—
Ohta, Sadayasu. 234,996.

Kitafuji, Koichi : *See*—
Miyakawa, Yutaka, and Kitafuji. 235,014.

Kitson, Gerald L. Poultry feeder chain. 235,006, 4–29–75, Cl. D8—261.

Kitson, Gerald L. Poultry house ventilation plenum. 235,025, 4–29–74. Cl. D30—2.

Kovacs, John S., to Sperry Rand Corp. Calculator. 235,022, 4–29–75, Cl. D26—5.

Kreisel, Betty C. Apron. 234,985, 4–29–75, Cl. D2—226.

Krikorian, Haig K. : *See*—
Jansen, George E. 235,031.

Krikorian, Peter K. : *See*—
Jansen, George E. 235,031.

Kuramochi, Shigeaki, to Louis Marx & Co., Inc. Carrying case for typewriter. 235,036, 4–29–75, Cl. D87—1.

Larami Corp. : *See*—
Ziff, Louis J. 235,030.

Lazo de la Vega, Cecilio I. Bar stools or the like. 234,986, 4–29–75, Cl. D6—32.

Lopez-Benitez, Carlos L., to Windwood Inc. Chair. 234,987, 4–29–75, Cl. D6—57.

Lopez-Benitez, Carlos L., to Windwood Inc. Chair. 234,988, 4–29–75, Cl. D6—69.

Lopez-Benitez, Carlos L., to Windwood Inc. Seat. 234,989, 4–29–75, Cl. D6—69.

Maidenform, Inc. : *See*—
Gentile, Josie. 234,984.

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Matrone, John L. : *See*—
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Mercedes-Benz of North America, Inc. : *See*—
Stiene, Frank J. 234,994.

Miyakawa, Yutaka, and K. Kitafuji, to Shimano Industrial Co. Ltd. Fishing reel. 235,014, 4–29–75, Cl. D22—25.

Morgan, Mildred L. Towel holder or the like. 234,990, 4–29–75, Cl. D6—99.

Nordisk Ventilator Co. Aktieselskab: *See*—
Holt, Jorgen. 235,020.
Ohta, Sadayasu, to Kabushiki Kaisha Morita Seisakusho. Back for a dental chair. 234,996, 4–29–75, Cl. D6—197.
Olivier, Emile L. Stand for Christmas trees or the like. 234,991, 4–29–75, Cl. D6—105.
Omron Tateisi Electronics Co.: *See*—
Ishikawa, Minoru. 235,008.
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Sutton, Lawrence R., Ranno, and Hewson. 235,005.
Peters, Philip H., Jr., and J. L. Matrone, to Environment/One Corp. Double oven induction heating electric range. 235,000, 4–29–75, Cl. D7—118.
Peters, Philip H., Jr., and J. L. Matrone, to Environment/One Corp. Combined counter, sink, storage and induction heating electric cooking unit. 235,018, 4–29–75, Cl. D23—50.
Ranno, Carl P.: *See*—
Sutton, Lawrence R., Ranno, and Hewson. 235,005.
Rosenberg, David J. Blood filter. 235,035, 4–29–75, Cl. D83—1.
Shimano Industrial Co. Ltd.: *See*—
Miyakawa, Yutaka, and Kitafuji. 235,014.
Sperry Rand Corp.: *See*—
Kovacs, John S. 235,022.
Stampley, James W. Cup-saucer ash tray combination. 234,997, 4–29–75, Cl. D7—3.
Stern, Emanuel, to Dynek Corp. Water purifier. 235,015, 4–29–75, Cl. D23—3.
Stewart, James E., to J & G Productions Ltd. 234,999, 4–29–75, Cl. D7—72.
Stiene, Frank J., to Mercedes-Benz of North America, Inc. Bookstand console. 234,994, 4–29–75, Cl. D6—184.
Sunday, William V. Design for washboard. 235,001, 4–29–75, Cl. D7—201.
Sunday, William V. Design for washboard. 235,002, 4–29–75, Cl. D7—201.
Sutton, Lawrence R., C. P. Ranno, and K. E. Hewson, to Performance Industries, Inc. Carpet cutter. 235,005, 4–29–75, Cl. D8—98.
Swayze, Samuel F., to Eastman Kodak Co. Combined microphone holder with integral cord storage therefor. 235,023, 4–29–75, Cl. D26—14.
Thompson, Frank B. Portable bar. 235,009, 4–29–75, Cl. D12—22.
Travis, David L.: *See*—
Anderson, H. Dwight, and Travis. 235,011.
Wilje, Oscar. Roller ski and skate pole. 235,029, 4–29–75, Cl. D34—14.
Windwood Inc.: *See*—
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Lopez-Benitez, Carlos L. 234,988.
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Ziff, Louis J., to Larami Corp. Bubble blowing wand. 235,030, 4–29–75, Cl. D34—15.

CLASSIFICATION OF PATENTS

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39.28R 3,879,936
39.45 3,879,937
39.61 3,879,938
39.65 3,879,939
39.74R 3,879,940
226R 3,879,941
245 3,879,942
278 3,879,943
299 3,879,944
522 3,879,945
535 3,879,946
3,879,947
548 3,879,948
649 3,879,949
698 3,879,950

CLASS 61
1R 3,879,951
46.5 3,879,952
63 3,879,953

CLASS 62
3,879,954
89 3,879,955
123 3,879,956
240 3,879,957
354 3,879,958

CLASS 64
14 3,879,959
21 3,879,960

CLASS 65
27 3,880,629
30 3,880,630
3,880,631
37 3,880,632
60 3,880,633
73 3,880,634
106 3,880,635
107 3,880,636
113 3,880,637
116 3,880,638
134 3,880,639
261 3,880,640

CLASS 66
9A 3,879,961
19 3,879,962
50R 3,879,963
87 3,879,964

CLASS 68
5C 3,879,965
203 3,879,966

CLASS 69
42 3,879,967

CLASS 70
81 3,879,968
242 3,879,969
275 3,879,970
388 3,879,971

CLASS 71
30 3,880,641
67 3,880,642
78 3,880,643
88 3,880,644
98 3,880,645
111 3,880,646

CLASS 72
37 3,879,973
56 3,879,974
64 3,879,975
90 3,879,976
97 3,879,972
127 3,879,994
137 3,879,977
183 3,879,978
338 3,879,979
393 3,879,980
410 3,879,981

CLASS 73
12 3,879,982
15B 3,879,983
23.1 3,879,984
27R 3,879,985
28 3,879,986
30 3,879,992
37 3,879,987
67.5H 3,879,989
71.3 3,879,988
95 3,879,990
3,879,991
104 3,879,993
133R 3,879,995
139 3,879,996
141A 3,879,998
141R 3,879,997
144 3,879,999
159 3,880,000
160 3,880,001
180 3,880,002
231R 3,880,003
254 3,880,004
334 3,880,005
362AR 3,880,006
3,880,007
398C 3,880,008
3,880,009
406 3,880,010
421B 3,880,011
426 3,880,012

CLASS 74
89.15 3,880,013
245R 3,880,014
337.5 3,880,015
405 3,880,016
687 3,880,017

CLASS 75
.5A 3,880,647
13 3,880,648
60 3,880,649
72 3,880,650
82 3,880,651
84.5 3,880,652
101R 3,880,653
122 3,880,654
175.5 3,880,655

CLASS 76
25A 3,880,018
37 3,880,019
104A 3,880,021
104 3,880,020

CLASS 81
9.5R 3,880,022
10 3,880,023
57.34 3,880,024

CLASS 82
9 3,880,025
47 3,880,026
98 3,880,027

CLASS 83
7 3,880,028
3,880,029
9 3,880,030
81 3,880,031
102.1 3,880,032
104 3,880,033
220 3,880,034
420 3,880,035
421 3,880,036
659 3,880,037
685 3,880,038

CLASS 84
1.01 3,880,039
291 3,880,040

CLASS 85
70 3,880,041
72 3,880,042

CLASS 89
1.5E 3,880,043
8 3,880,044
9 3,880,045

CLASS 90
4 3,880,046
12D 3,880,047
13.4 3,880,048

CLASS 91
33 3,880,049
374 3,880,050
411R 3,880,051
501 3,880,052

CLASS 92
94 3,880,053
129 3,880,054
170 3,880,055

CLASS 93
58.1 3,880,056
84TW 3,880,058
84R 3,880,057
93DP 3,880,059

CLASS 96
1.2 3,880,656
1.5 3,880,657
29D 3,880,658
48R 3,880,659
50R 3,880,660
55 3,880,661
111 3,880,665

CLASS 98
40D 3,880,060
115K 3,880,062
115R 3,880,061

CLASS 99
329R 3,880,063
349 3,880,064
353 3,880,065
468 3,880,066
472 3,880,067
478 3,880,068
483 3,880,069

CLASS 100
7 3,880,070
27 3,880,071
100 3,880,072
142 3,880,073

CLASS 101
38A 3,880,074
111 3,880,075
115 3,880,076
219 3,880,077
273 3,880,078
334 3,880,079

CLASS 102
24R 3,880,080
67 3,880,081
70.2R 3,880,082
92.4 3,880,083

CLASS 104
20 3,880,084
88 3,880,085
94 3,880,086
123 3,880,087
168 3,880,088

CLASS 105
197DB 3,880,089
366C 3,880,090

CLASS 106
35 3,880,662
47Q 3,880,663
99 3,880,664
288Q 3,880,666

CLASS 108
44 3,880,091
55 3,880,092
3,880,093
74 3,880,094
114 3,880,095
141 3,880,096
150 3,880,097

CLASS 110
8R 3,880,098

CLASS 111
1 3,880,099
77 3,880,100

CLASS 112
79R 3,880,101

CLASS 114
.5T 3,880,102

16R 3,880,103
144C 3,880,104
206R 3,880,105

CLASS 115

18E 3,880,106
21 3,880,107

CLASS 116

114AH 3,880,108
114R 3,880,109
115 3,880,110

CLASS 118

4 3,880,111
8 3,880,112
48 3,880,113
75 3,880,114
231 3,880,115
303 3,880,116
410 3,880,117
621 3,880,118
636 3,880,119

CLASS 119

14.04 3,880,120
52AF 3,880,121
97R 3,880,122

CLASS 122

510 3,880,123

CLASS 123

25A 3,880,124
32EA 3,880,125
70R 3,880,126
90.35 3,880,127
90.52 3,880,128
119A 3,880,129
119B 3,880,130
139E 3,880,131
148E 3,880,133
148R 3,880,132
195C 3,880,134

CLASS 124

8 3,880,135
30R 3,880,136

CLASS 126

9R 3,880,139
110R 3,880,140
121 3,880,141
288 3,880,142
343.5A 3,880,143

CLASS 127

7 3,880,667
9 3,880,668

CLASS 128

1R 3,880,137
2A 3,880,138
2.05A 3,880,145
2.05E 3,880,151
2.06A 3,880,147
2.06B 3,880,146
2.1B 3,880,144
6 3,880,148
24R 3,880,149
24.3 3,880,150
33 3,880,152
52 3,880,153
66 3,880,154
90 3,880,155
130 Re.28,399
3,880,156
142.7 3,880,157
155 3,880,158
157 3,880,159
158 3,880,160
218F 3,880,163
218R 3,880,162
276 3,880,164
284 3,880,165
325 3,880,166
339 3,880,167
351 3,880,168
418 3,880,169
421 3,880,170

CLASS 131

84C 3,880,171
143 3,880,172
269 3,880,173

CLASS 132

7 3,880,174
53 3,880,175

CLASS 134

167C 3,880,176

CLASS 136

10 3,880,669
86R 3,880,670
100R 3,880,671
111 3,880,672
173 3,880,673
237 3,880,674

CLASS 137

13 3,880,177
14 3,880,178
3,880,179
60 3,880,180
106 3,880,181
212 3,880,182
359 3,880,183
454.2 3,880,184
493.9 3,880,185
495 3,880,186
525 3,880,187
577 3,880,188
608 3,880,189
624.12 3,880,190
625.32 3,880,191
827 3,880,192

CLASS 138

26 3,880,193
128 3,880,194
172 3,880,195

CLASS 139

1R 3,880,196
12 3,880,197
54 3,880,199
125 3,880,200
127P 3,880,198
302 3,880,201
383 3,880,202
384B 3,880,203

CLASS 140

93A 3,880,204
147 3,880,205

CLASS 141

5 3,880,206
20 3,880,207
82 3,880,208
95 3,880,209
175 3,880,210
231 3,880,212
258 3,880,211
295 3,880,213
346 3,880,214

CLASS 144

39 3,880,215
309AC 3,880,216

CLASS 148

1.5 3,880,675
3,880,676
11.5R 3,880,678
13.1 3,880,679
171 3,880,680
175 3,880,681
3,880,682

CLASS 149

19.5 3,880,683

CLASS 150

.5 3,880,217

CLASS 152

209R 3,880,218
404 3,880,219

CLASS 156

8 3,880,684
19 3,880,685
59 3,880,686
62.2 3,880,687
190 3,880,688
233 3,880,689
242 3,880,690
244 3,880,691
261 3,880,692
273 3,880,693
331 3,880,694
423 3,880,695
428 3,880,696
467 3,880,697
504 3,880,698
505 3,880,699
514 3,880,700
526 3,880,701
624 3,880,677

CLASS 157

1.17 3,880,220

CLASS 159

13A 3,880,702
47 3,880,703

CLASS 162

16 3,880,704
101 3,880,705
103 3,880,706
167 3,880,707
3,880,708
3,880,709
3,880,710
357 3,880,711

CLASS 164

55 3,880,221
119 3,880,222
200 3,880,223

CLASS 165

2 3,880,224
9 3,880,225
11 3,880,226
27 3,880,227
30 3,880,228
40 3,880,229
105 3,880,230
166 3,880,231
3,880,232

CLASS 166

205 3,880,233
251 3,880,234
302 3,880,235
3,880,236
303 3,880,237
3,880,238

CLASS 169

37 3,880,239

CLASS 172

131 3,880,240
311 3,880,241
740 3,880,242
784 3,880,243

CLASS 173

19 3,880,244
163 3,880,245

CLASS 174

21R 3,881,050
35SM 3,881,051
103 3,881,052

CLASS 175

61 3,880,246
260 3,880,247
297 3,880,248
302 3,880,249

CLASS 178

6.8 3,881,053
7.3R 3,881,054
7.3S 3,881,055

CLASS 179

1MF 3,881,056
1SP 3,881,059
1A 3,881,058
1J 3,881,057
5.5 3,881,060
6R 3,881,061
6.3R 3,881,062
15AT 3,881,064
15BS 3,881,065
15BT 3,881,063
18GF 3,881,066
3,881,067
35 3,881,068
81B 3,881,069
90K 3,881,070
100.1DR 3,881,072
100.41K 3,881,073
115.5R 3,881,074
179 3,881,071

CLASS 180

65R 3,880,250
77H 3,880,251

CLASS 181

60 3,880,252
175 3,880,253

CLASS 182

2 3,880,254
5 3,880,255
136 3,880,256
228 3,880,257

CLASS 187

2 3,880,258
18 3,880,259

CLASS 188

72.9 3,880,260
73.5 3,880,261
77R 3,880,262
112 3,880,263

CLASS 191

49 3,880,264

CLASS 192

58B 3,880,265
86 3,880,266
108 3,880,267

CLASS 194

9R 3,880,268

CLASS 195

28N 3,880,738
28R 3,880,739
29 3,880,740
3,880,741
31R 3,880,742
51R 3,880,712
80R 3,880,713
99 3,880,714
103.5R 3,880,715
108 3,880,716
112 3,880,717
122 3,880,718

CLASS 197

6.1 3,880,269
6.4 3,880,270
157 3,880,271

CLASS 198

20R 3,880,272
34 3,880,273
165 3,880,274
192R 3,880,275
193 3,880,276
260 3,880,277

CLASS 200

33R 3,881,075
61.54 3,881,076
61.69 3,881,077
61.89 3,881,078
148A 3,881,079
150R 3,881,080
157 3,881,081

CLASS 202

234 3,880,719
262 3,880,720

CLASS 204

1R 3,880,721
1T 3,880,722
12 3,880,723
15 3,880,724
3,880,725
17 3,880,726
34 3,880,727
38A 3,880,728
39 3,880,729
46G 3,880,730
74 3,880,731
107 3,880,732
108 3,880,733
155 3,880,734
158R 3,880,735
159.12 3,880,736
165 3,880,743
195G 3,880,737
206 3,880,744
290R 3,880,745

CLASS 206

.8 3,880,279
5.1 3,880,278
44.12 3,880,280
217 3,880,281
306 3,880,282
316 3,880,283
354 3,880,284
373 3,880,285
386 3,880,286
397 3,880,287
508 3,880,288

CLASS 208

59 3,880,746
87 3,880,747
136 3,880,748

CLASS 209

80 3,880,749
111.7 3,880,289
3,880,750
125 3,880,751

CLASS 210

54 3,880,752
3,880,753
75 3,880,754
91 3,880,755
97 3,880,756
167 3,880,757
187 3,880,758
194 3,880,759
321 3,880,760
404 3,880,761
460 3,880,762
490 3,880,763

CLASS 211

13 3,880,290
24 3,880,291
112 3,880,292

CLASS 212

11 3,880,293

CLASS 214

1B 3,880,294
1.5 3,880,295
6DK 3,880,296
6H 3,880,297
11R 3,880,298
16.4B 3,880,299
17CB 3,880,300
21 3,880,301
35R 3,880,302
83.36 3,880,303
138R 3,880,304
147G 3,880,305
152 3,880,306
3,880,307
3,880,308
310 3,880,309
512 3,880,310

CLASS 215

7 3,880,311
100R 3,880,312
211 3,880,313
214 3,880,314

CLASS 219

79 3,881,082
84 3,881,083
121LM 3,881,084
216 3,881,085
222 3,881,086
233 3,881,087
271 3,881,088
388 3,881,089
433 3,881,090
489 3,881,091

CLASS 220

5A 3,880,315
86R 3,880,317
268 3,880,316
273 3,880,318
278 3,880,319

CLASS 221

9 3,880,320
66 3,880,321
296 3,880,322

CLASS 222

47 3,880,323
82 3,880,324
95 3,880,325
3,880,326
3,880,327
100 3,880,328
129.1 3,880,329
136 3,880,330
327 3,880,331
394 3,880,332
402.18 3,880,333

CLASS 223

82 3,880,334

CLASS 224

42.13 3,880,335
45S 3,880,336

CLASS 225

96.5 3,880,337

CLASS 226

91 3,880,338

CLASS 227

8 3,880,339

CLASS 228

45 3,880,340
123 3,879,837
124 3,880,608
180 3,879,838

CLASS 229

23R 3,880,341
27 3,880,342
28R 3,880,343

CLASS 232

17 3,880,344
44 3,880,345

CLASS 233

7 3,880,346
32 3,880,347

CLASS 235

54R 3,881,092
87R 3,880,349
92DN 3,880,350
95R 3,880,351
150.1 3,880,348
3,880,352
3,881,093
150.2 3,881,094
3,881,095
150.27 3,881,096
151 3,881,098
152 3,881,099
156 3,881,097
3,881,100
181 3,881,101

CLASS 236

9R 3,880,353

CLASS 239

132.3 3,880,354
288.3 3,880,355
308 3,880,356
380 3,880,357
551 3,880,358
565 3,880,359

CLASS 241

3 3,880,360
36 3,880,361
100.5 3,880,362
3,880,363
182 3,880,365
194 3,880,366
248 3,880,367
296 3,880,368
300 3,880,369

CLASS 242

1 3,880,370
35.5R 3,880,371
55 3,880,372
56R 3,880,373
67.1R 3,880,374
78.7 3,880,375
83 3,880,376
86.5R 3,880,377
96 3,880,378
107.4 3,880,364
3,880,379
3,880,380
3,880,381
195 3,880,382

CLASS 244

3.27 3,880,383
42D 3,880,384
77M 3,880,385
110A 3,880,386
121 3,880,387

CLASS 248

188.3 3,880,388
205R 3,880,389
223 3,880,390
246 3,880,391
324 3,880,392
325 3,880,393
354S 3,880,394
464 3,880,395
475R 3,880,396

CLASS 249

214 3,880,397

CLASS 250

202 3,881,102
203R 3,881,103
213VT 3,881,104
225 3,881,105
234 3,881,106
3,881,107
307 3,881,108
338 3,881,109
360 3,881,110
373 3,881,111
551 3,881,113
565 3,881,112

CLASS 251

16 3,880,398
121 3,880,399
155 3,880,400
205 3,880,401
212 3,880,402

CLASS 252

8.5A 3,880,764
8.55D 3,880,765
173 3,880,766
299 3,880,767
301.1R 3,880,769
301.4P 3,880,768
301.4R 3,880,770
357 3,880,771
387 3,880,772
400A 3,880,773
458 3,880,774
462 3,880,775
466PT 3,880,776
514 3,880,777
558 3,880,778

CLASS 254

86R 3,880,403

CLASS 256

1 3,880,404
59 3,880,405
64 3,880,406

CLASS 259

9 3,880,407
72 3,880,408
95 3,880,409
159R 3,880,410

CLASS 260

2A 3,880,779
2.5AC 3,880,781
2.5AG 3,880,782
2.5AM 3,880,780
3 3,880,783
13 3,880,784
22S 3,880,785
23EM 3,880,786
23.5R 3,880,787
25 3,880,788
28 3,880,789
28.5AS 3,880,791
28.5A 3,880,790
29.2N 3,880,792
29.6RW 3,880,793
30.4R 3,880,794
33.6UA 3,880,796
33.8R 3,880,795
37N 3,880,797
42.16 3,880,798
45.7P 3,880,799
45.75W 3,880,802
45.85N 3,880,804
45.85R 3,880,803
45.9R 3,880,800
3,880,801
45.95F 3,880,805
47EN 3,880,806
51R 3,880,807
75NA 3,880,808
75NH 3,880,809
77.5R 3,880,810
78UA 3,880,811

78.3R 3,880,812
78.5BB 3,880,813
78.5R 3,880,814
79.1 3,880,815
79.5B 3,880,816
80.7 3,880,817
80.75 3,880,818
80.78 3,880,819
82 3,880,820
85.3H 3,880,821
89.5R 3,880,956
94.7N 3,880,822
112G 3,880,824
112.5 3,880,823
3,880,825
3,880,826
210AB 3,880,827
3,880,828
211.5R 3,880,829
212 3,880,830
232 3,880,831
233.3R 3,880,832
239BD 3,880,835
239BF 3,880,836
239A 3,880,833
239E 3,880,834
239.1 3,880,837
239.3B 3,880,838
3,880,840
239.3P 3,880,839
240CA 3,880,841
240G 3,880,842
240.1 3,880,843
240.4 3,880,844
243C 3,880,845
3,880,846
3,880,848
243R 3,880,847
244R 3,880,849
246B 3,880,850
247.1M 3,880,852
247.5FP 3,880,853
251R 3,880,854
256.4F 3,880,855
281 3,880,857
3,880,858
3,880,859
283S 3,880,860
3,880,861
285 3,880,862
3,880,863
285.5 3,880,856
286Q 3,880,864
3,880,865
293.53 3,880,866
295T 3,880,867
296B 3,880,868
296P 3,880,869
3,880,870
306.7C 3,880,872
306.7T 3,880,871
306.8D 3,880,873
306.8F 3,880,874
308A 3,880,875
308R 3,880,876
3,880,877
3,880,878
309.2 Re.28,403
3,880,879
326S 3,880,880
326.1 3,880,881
340.7 3,880,882
340.5 3,880,883
343.2R 3,880,885
3,880,886
343.2S 3,880,884
343.3 3,880,887
343.6 3,880,888
345.2 3,880,890
345.7 3,880,889
346.2R 3,880,891
380 3,880,892
396R 3,880,893
397.2 3,880,894
397.4 3,880,895
397.45 3,880,896
400 3,880,897
408 3,880,898
412.2 3,880,899
429K 3,880,900
448AD 3,880,901
455B 3,880,902
465B 3,880,905
465D 3,880,903
465E 3,880,904
468D 3,880,906
470 3,880,907
471C 3,880,908

3,880,909
473S 3,880,910
488B 3,880,911
488R 3,880,912
491 3,880,913
502R 3,880,914
514K 3,880,915
515R 3,880,916
3,880,917
519 3,880,918
3,880,919
524R 3,880,920
531R 3,880,921
534C 3,880,922
544Y 3,880,923
558P 3,880,924
563R 3,880,925
566AC 3,880,926
570.5R 3,880,927
583P 3,880,928
3,880,929
586C 3,880,930
586F 3,880,931
590 3,880,932
609R 3,880,933
613D 3,880,934
3,880,935
615A 3,880,936
624E 3,880,937
632HF 3,880,938
635R 3,880,939
638HF 3,880,940
644 3,880,941
646 3,880,942
651F 3,880,943
671C 3,880,944
683.75 3,880,945
830P 3,880,947
830R 3,880,946
835 3,880,948
3,880,949
862 3,880,950
876B 3,880,953
876R 3,880,951
878R 3,880,952
879 3,880,954
887 3,880,955
901 3,880,957
944 3,880,958
950 3,880,959
956 3,880,960

CLASS 261

16 3,880,961
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CLASS 267

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D1—	16	234,983		177	234,993			235,002		182	235,010		142	235,019			235,028
D2—	4	234,984		184	234,994	D8—	72	235,003			235,011		163	235,020	D34—	14D	235,029
	226	234,985		191	234,995			235,004			235,012		165	235,021		15H	235,030
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	69	234,988		52	234,998	D9—	44	235,032	D23—	3	235,015	D29—	1C	235,024	D61—	1E	235,034
		234,989		72	234,999		149	235,007		18	235,016	D30—	2	235,025	D83—	R	235,035
	99	234,990		118	235,000	D10—	40	235,008		34	235,017		39	235,026	D87—		235,036
	105	234,991		201	235,001	D12—	22	235,009		50	235,018		99	235,027			235,037
	132	234,992															

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54 :	3,879,880	3,880,009	3,880,190	3,880,397	3,880,751	3,881,077
	3,880,470	3,880,046	3,880,288	3,880,669	3,880,755	56 : 3,879,887
55 :	Re.28,401	3,880,118	3,880,335			

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6 : 234,985	13 : 234,986	235,006	36 : 234,983	235,035	42 : 235,009
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Plant Patents

6 : 3,710	3,711	3,712	44 : 3,709	

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